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DENVER, COLORADO

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 9 IN SET 140

Production changes on the Radio Craftsmen Model RC200 Television Receiver are as follows:

Serial # 5001 to 5500

The early production run of Model RC200 employed an RF tuner with part number 25B043.

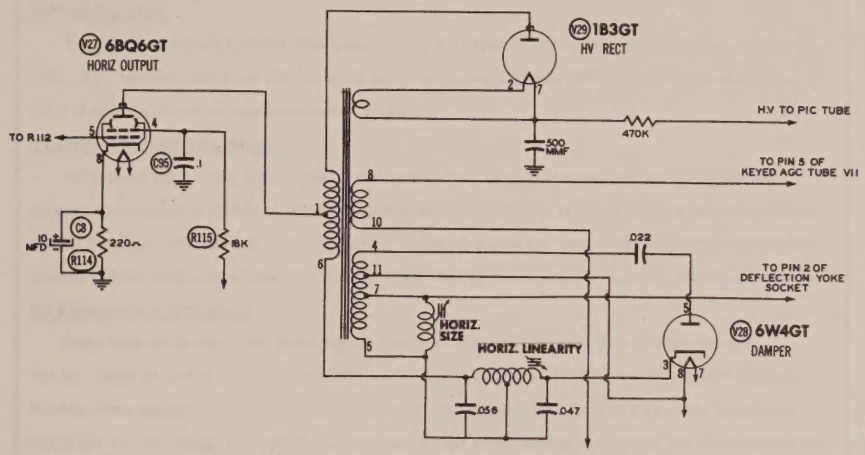
Serial # 5501 to 7500

The second production run of Model RC200 was covered in Photofact Folder 9 in Set 140.

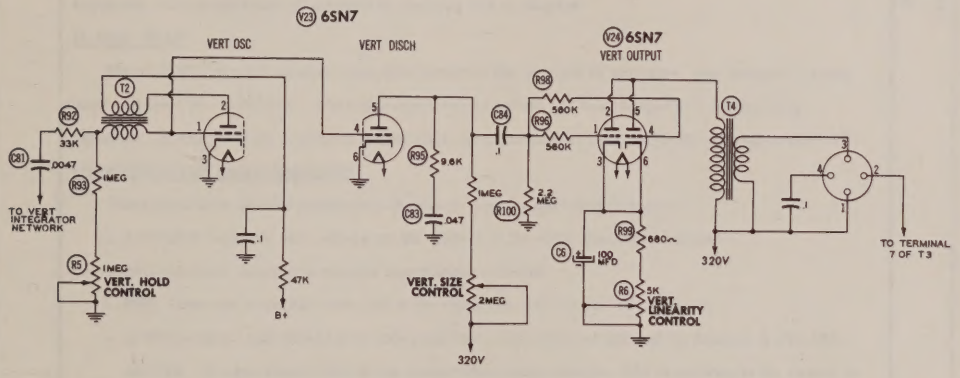
Serial # 7501 and up

The late version of Model RC200 used a different horizontal output transformer (part #19S016).

The partial schematic below shows the new horizontal output circuit.



The vertical output circuit was revised as shown in the schematic below.



Other changes in the Model RC200 are as follows:

R93 was changed to 1.5 megohm.

R104 was changed to 33K.

A 22KΩ Resistor was added between C97 and the junction of R104 and pins 1 & 2 of V25.

C97 was changed to .047 MFD.

R109 was changed to 150K

C92 was changed to 470MMF

R110 was changed to 10KΩ

RADIO CRAFTSMEN MODEL RC200

PRODUCTION CHANGES
BULLETIN 40

PRODUCTION CHANGES
BULLETIN 40

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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 15 IN SET 167

Chassis V-2216-1	Westinghouse Models H-667T17, H-668T17, H678K17, H-679K17 (Chassis V-2216-1) were covered in Photofact Folder 15 in Set 167.
Chassis V-2216-2	Later productions of Models H-678K17 andH-679K17 uses chassis V-2216-2. This chassis is the same as the V-2216-1 chassis except that it uses a 12BH7 video amplifier tube rather than a 6AH6 or 6AC7.
Models H-678K17, H-679K17 (Ch. V-2216-1, V-2216-2)	Production changes for chassis V-2216-1 and V-2216-2 are given below:

BENDING AT TOP OF PICTURE

To eliminate a condition which may cause a normally straight vertical line to appear bent at the top of of the picture, C58 was changed to .5MFD. C37 was changed to .01MFD and reconnected in parallel with R24.

INCREASED SYNC

To provide increased sync for weak signal areas, the keyed AGC tube cathode resistor was changed to 15KΩ; R53, between pins 6 and 7 of the keyed AGC tube, was changed to 4700Ω; and R36, connected to pin 2 of the sync amplifier tube was changed to 12KΩ.

TO IMPROVE VERTICAL HOLD

To improve the vertical hold in weak signal areas, R82, connected at the input of the integrating network was changed to 4700Ω; a .01MFD capacitor was added between the input of the integrating network and the junction of R82 and R81; a 47KΩ resistor was added across the input of the integrating network and ground; and for increased vertical hold control range, R87 in series with the control, was changed to 560KΩ.

TO ELIMINATE AUDIO BUZZ

Audio buzz which may occur under certain conditions was eliminated by the following changes: The lst sound IF screen grid resistor, C60, was changed to .002 MFD. R54, the lst sound IF cathode resistor, was changed to 120Ω. A .005MFD capacitor was added in parallel with R54; R55, in the plate supply for V8, was changed to 4700Ω; A 27KΩ resistor was added between the screen grid of V8 and ground.

TO PREVENT OSCILLATION ON CHANNEL 3.

The RF tuner was modified to prevent oscillation on channel 3. Tuners containing the modification are designated V-10880-2 and are identified by a red dot on the back of the tuner. When this tuner is employed, correct bandwidth is provided by changing C34 to 150MMF.

41.25MC TRAP

The 41.25MC trap L17, located in the grid circuit of the lst video IF amplifier, was changed to a slug tuned coil (part No. V-10771-1). The adjustable trimmer across L17 was changed to a 12MMF fixed capacitor. In Step #5 of the alignment instructions, A9 adjustment is provided by the slug tuned coil, L17.

TO IMPROVE THE VIDEO RESPONSE

Later production chassis incorporate changes to improve the video response:

1. A 470MMF capacitor was added from the cathode of the video amplifier to ground.
2. R37, the video output grid resistor was changed to 3300Ω.
3. R119, connected in parallel with L25 in the video detector circuit, was removed.
4. A 220Ω resistor was added in the video detector circuit between L25 and the junction of C51, L24, and C59. In some chassis that do not contain these video changes, R35 is included in the circuit as a protection against crystal burn out, but its value is 220Ω.
5. When the video output tube is a 6AH6 or a 12BY7, two 3.3MMF capacitors are added in parallel from the video output plate to ground. When the video output is a 6AC7, only one 3.3MMF capacitor is added from the plate to ground.

PICTURE SHADING

To eliminate streaking and brightness variations between the upper and lower portions of the picture, R91 was changed to 3300Ω, and a 6800Ω resistor was added between C83 and the junction of R91 and C84.

BARKHAUSEN OSCILLATIONS

Under certain conditions, Barkhausen oscillation may develop in the horizontal output stage. Radiation of this energy into the antenna circuits may result in dark vertical lines on the left side of the picture and interfere with the sync in weak signal areas. To eliminate this condition a 2.7 microhenry reactor was added in series with the lead to the plate of the horizontal output tube, a 1.1microhenry reactor was added in series with the lead to the plate of the 6W4GT damper tube, and a.005MMFcapacitor was added from the screen grid of the horizontal output tube to ground.

WESTINGHOUSE MODELS H-678K17, H-679K17 (Ch. V-2216-1, V-2216-2)

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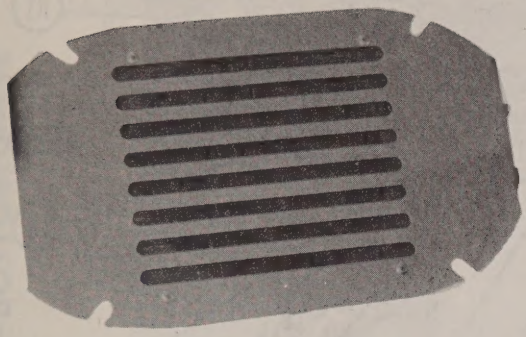
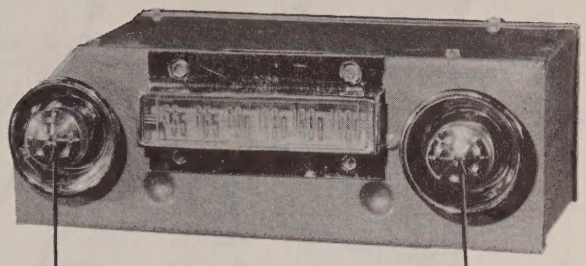
AIRCASTLE
MODEL 610.F151





VOLUME CONTROL ON-OFF SW.

TUNING CONTROL

AIRCASTLE
MODEL 610.F151

TRADE NAME	Aircastle Model 610. F151 (Cat. #96Z504) (For 1951 Ford Automobiles)
SUPPLIER	Spiegel, Inc., 1061 W. 35th., Chicago 9, Ill.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 5.6 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	538-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the tuning gang fully open and set the right hand edge of the pointer saddle 1/4 inch from the right hand end of the dial back plate.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2) Low side to chassis.	455 KC (400∿ Mod)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	100MMF	High side to antenna terminal. Low side to chassis.	1600 KC	"	"	A5	"
3.	"	"	1400 KC	Tune to 1400 KC signal	"	A6, A7	"
4.	"	"	600 KC	Tune to 600 KC signal	"	A8, A9, A10	"

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRCASTLE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. -AVC-AF Amp	6AT6	6AT6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRCASTLE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	CE-86	AFH3-107		UP2235C		TVL-3678	■ Filter
B	20	350							▲ Filter
C	20	25							Audio Output Cathode
C2	.05	200	C207	P288-05	D6-503	PJ2S5		2TM-S5	AVC Filter
C3	.05	200	C207	P288-05	D6-503	PJ2S5		2TM-S5	Screen Bypass
C4	.05	200	C207	P288-05	D6-503	PJ2S5		2TM-S5	AVC Filter
C5	100		CC200	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C6	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Diode RF Filter †
C7	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling ¶
C8	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate Bypass †
C9	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C10	.01	600	C206	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C11	.008	1600	C205			PTE16D8		MB-D8	Buffer Cap.
C12	.5	100	C209	P185-5		MP2P5		68P20	Hash Filter
C13	.5	100	C209	P185-5		MP2P5		68P20	Hash Filter

† Some models use 200MMF in this application (Part #CC201)
¶ Some models use .002MFD in this application (Part #C203)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	750KΩ	½	RV-57 *		AG-79-Z	B-70-S	Volume Control
B	Shaft		Not Req.		FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.		SWB	Not Req.	Attach to R1A per instructions

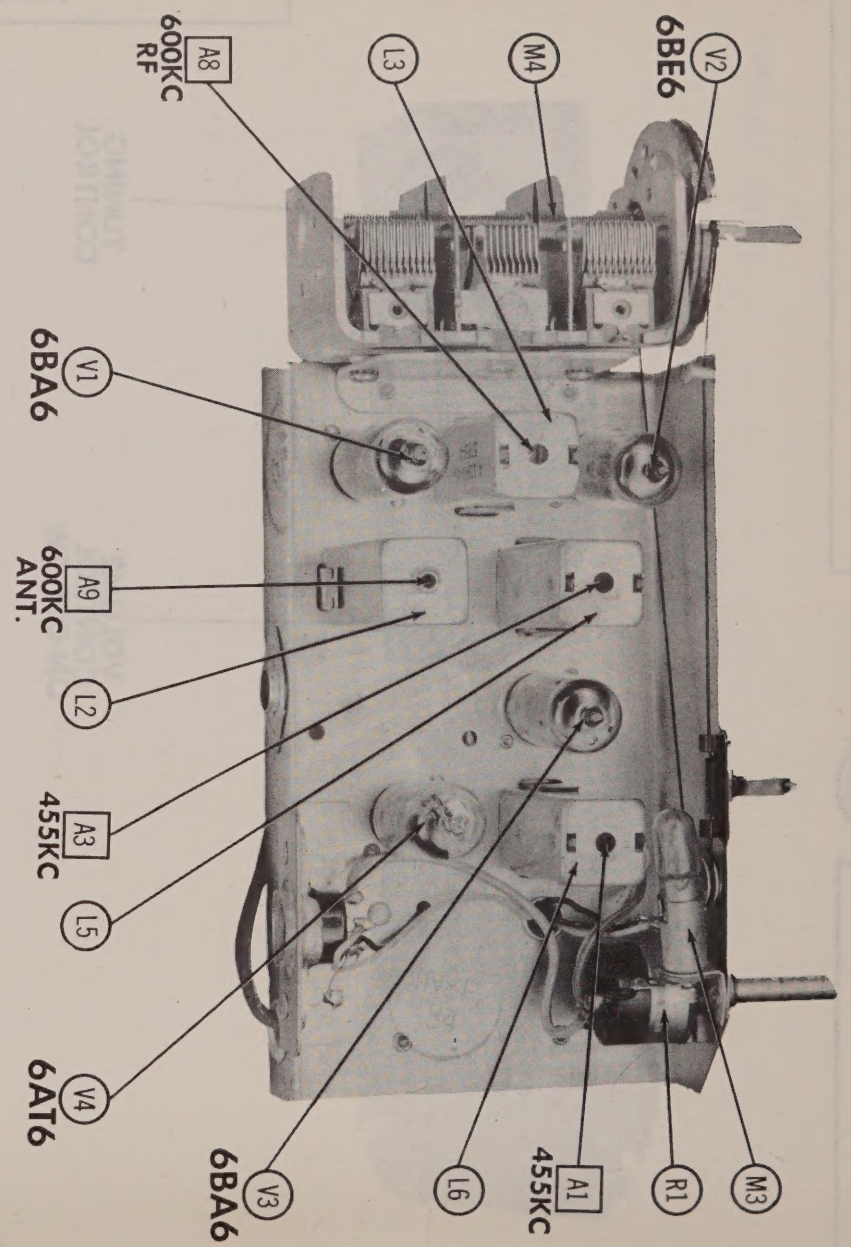
* Alternate Part #RV-100

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRCASTLE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	1.2Meg	½		BTS-1.2Meg	AVC Network - See Note 1
R3	330Ω	½	R303	BTS-330	RF Amp. Cathode
R4	20KΩ	½	R306		Osc. Grid
R5	1500Ω	½	R314	BTS-1500	IF Amp. Cathode
R6	2Meg	½	R310		AVC Network
R7	20KΩ	2	R313		Screen Dropping
R8	10Meg	½	R311	BTS-10Meg	AF Amp. Grid
R9	250KΩ	½	R307		AF Amp. Plate
R10	500KΩ	½	R308		Output Grid
R11	330Ω	½	R303	BTS-330	Output Cathode
R12	1000Ω	1	R312	BTA-1000	Filter
R13	120Ω	½		BTS-120	Hash Suppression - See Note 2
R14	120Ω	½		BTS-120	Hash Suppression - See Note 2

Note 1. Some models use a 1MegΩ resistor in this application
Note 2. Some models use a 100Ω resistor in this application

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 3A	430VCT @ .046A			TV-100		P-2971	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRCASTLE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4.5KΩ	3.4Ω	390Ω	.7Ω	Part of PM-705	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIRCASTLE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P. M.	3.4Ω	PM-705		52A1	
	CONE DIA.	V. C. DIA.				
SP1B	5"	9/16"				

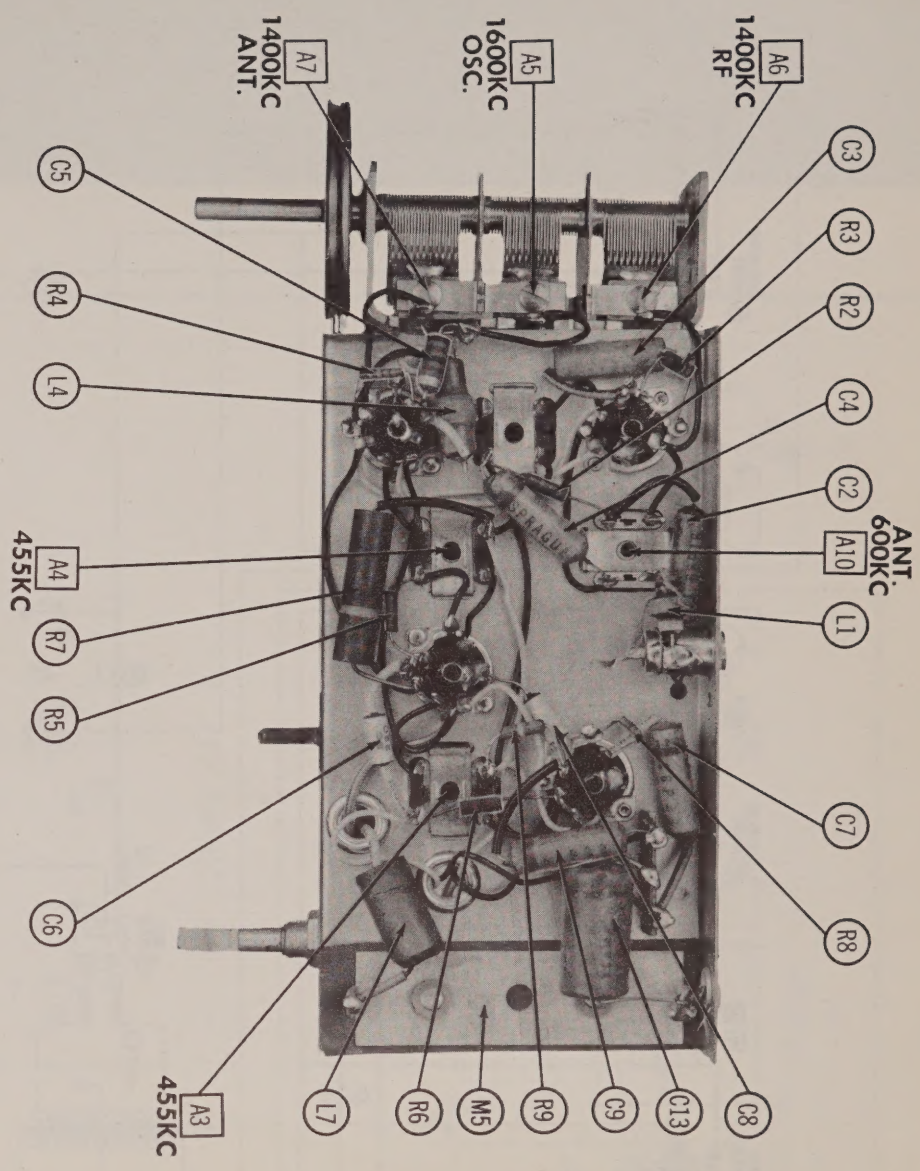
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	AIRCASTLE PART No.	MERIT PART No.	
L1	Ant. Hash Choke	1.4Ω		L200		Wound on Capacitor
L2	Ant. Coil	21Ω	5.6Ω	57FB-3		Alternate Part #15053
L3	RF Coil	90Ω	6.5Ω	57FB-4		Alternate Part #15054
L4	Osc. Coil	8.8Ω		L201		Tap @ .8Ω
L5	Input IF	19Ω	19Ω	1655-16	BC-352	Alternate Part #14977
L6	Output IF	19Ω	19Ω	1655-16	BC-353	Alternate Part #14977
L7	Fil. Choke	0Ω		L203		
L8	Hash Choke	0Ω		L202		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				AIRCASTLE PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6.3 V. DC @ 3.4A	115 ∿	V-94	5301	5301	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

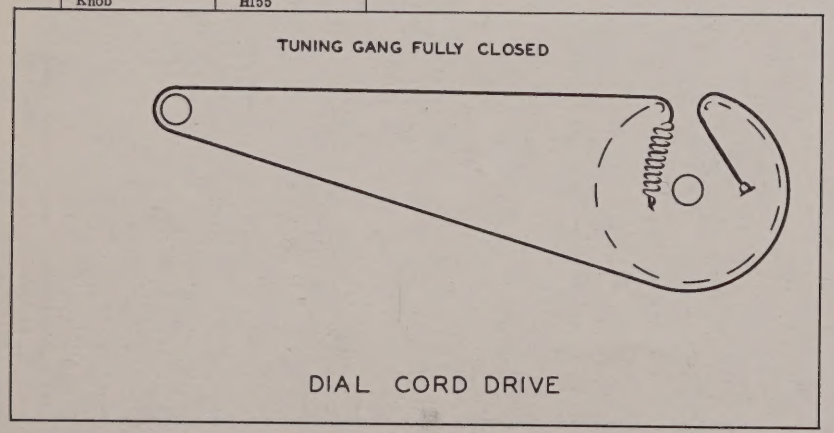
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			AIRCASTLE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	3AG	15A. 32V.	A201	A300	311015	155020	AGC15	HDJ-B

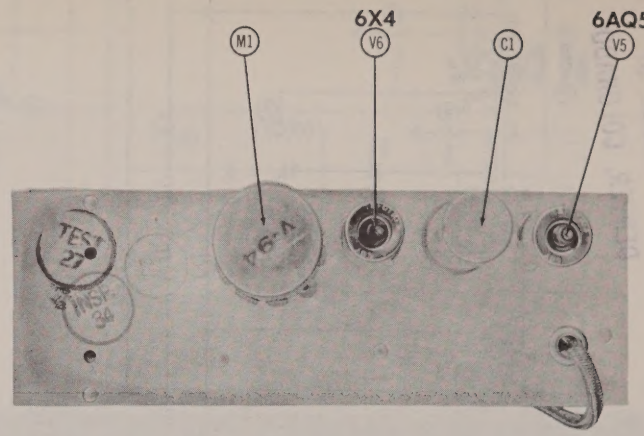
DIAL LIGHTS

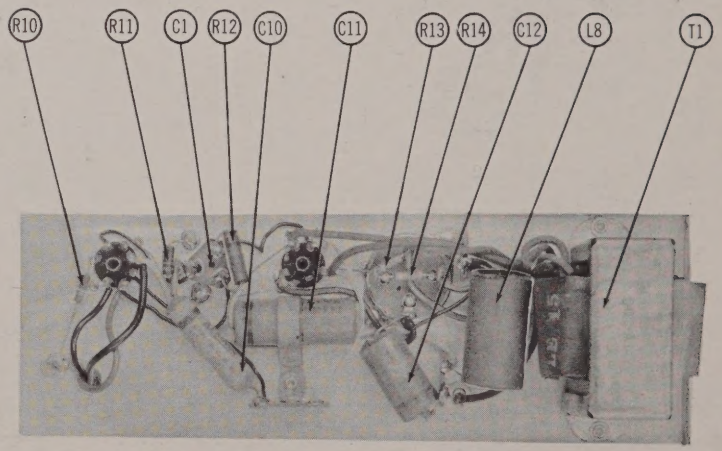
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					AIRCASTLE PART No.		
M3	Bayonet	6-8	.25	Brown	T47		Type #47

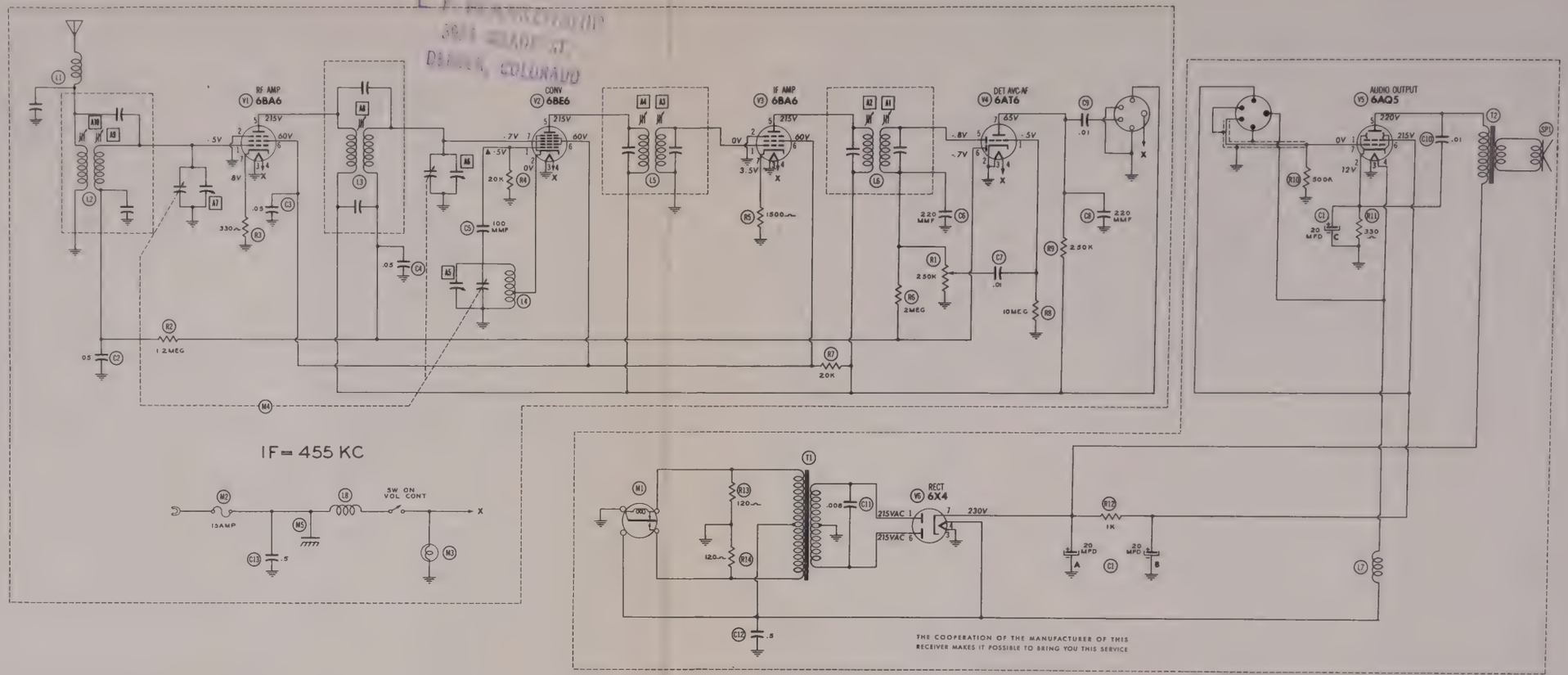
MISCELLANEOUS

ITEM No.	PART NAME	AIRCASTLE PART No.	NOTES
M4	3 Gang Var. Cap.	CV-100A	(23-391MMF, 24-387MMF, 35-198MMF)
M5	Spark Plate		
	Dial Scale	D151	
	Pointer	PS151	
	Knob	H155	








RF AMP V1 6BA6
CONV V2 6BE6
IF AMP V3 6BA6
DET AVC-AF W4 6AT6
AUDIO OUTPUT V5 6AQ5
RECT V6 6X4
IF = 455 KC
3W ON VOL CONT
15AMP
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	3.9Meg	0Ω	0Ω	.4Ω	†1KΩ	†21KΩ	330Ω
V 2	6BE6	22KΩ	.8Ω	0Ω	.4Ω	†1KΩ	†21KΩ	2.7Meg
V 3	6BA6	19Ω	0Ω	0Ω	.4Ω	†1KΩ	†21KΩ	1.5KΩ
V 4	6AT6	10Meg	0Ω	0Ω	.4Ω	750KΩ	2.7Meg	†270KΩ
V 5	6AQ5	500KΩ	330Ω	0Ω	.4Ω	†390Ω	†1KΩ	500KΩ
V 6	6X4	260Ω	INF	0Ω	.4Ω	INF	275Ω	90KΩ

† MEASURED FROM PIN 7 OF V6

▲ TAKEN WITH VACUUM TUBE VOLTMETER

1 - DC Voltage measurements are at 20,000 ohms per volt , AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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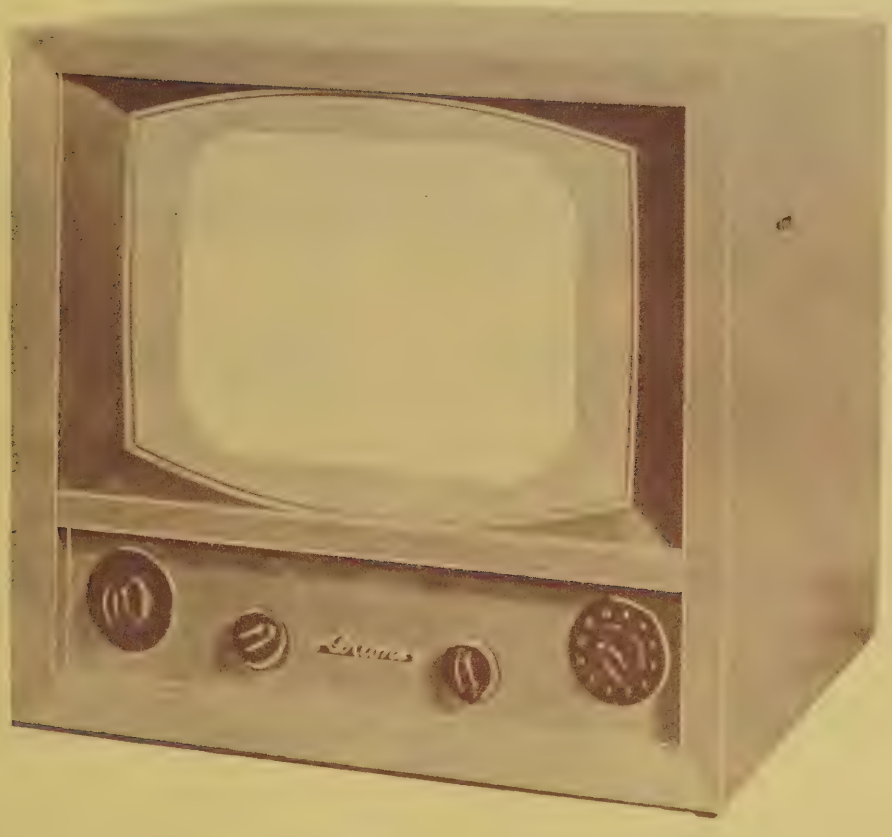
PHOTOFACT* Folder

ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CRR (2nd. Prod.),17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001

IMPORTANT FILING NOTICE

The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL AR14L

ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CRR (2nd. Prod.),17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001

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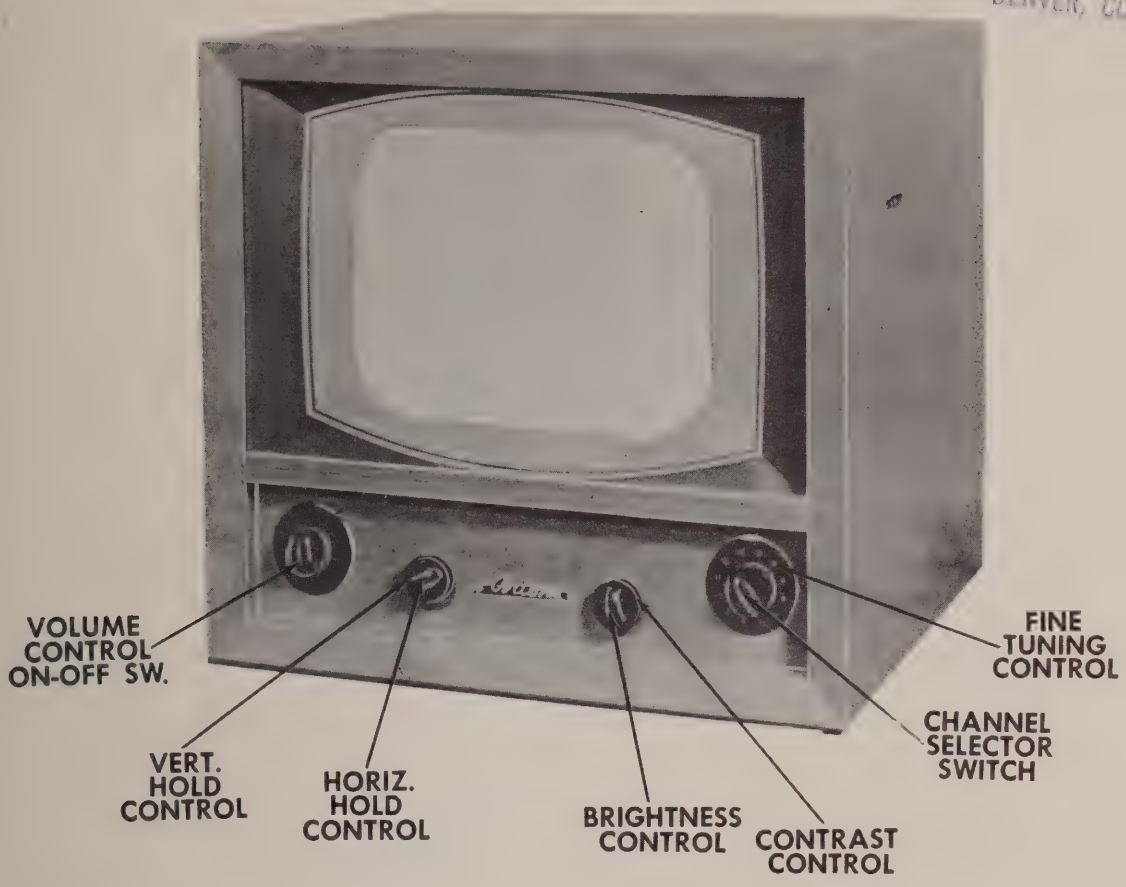
DATE 7-52 SET 172 FOLDER 3

PHOTOFACT* Folder
*TRADE MARK

ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CRR (2nd. Prod.), 17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001

3021 MEADE ST.
DENVER, COLORADO

ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CRR (2nd. Prod.), 17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001



Artone Model AR14L

TRADE NAME	Artone Models AR14L, AR17L, 17CD (2nd. Prod.), 17CRR (2nd. Prod.) 17ROG (2nd. Prod.) 20CD (2nd. Prod.), 203D(2nd. Prod.) 1000, 1001
SUPPLIER	Affiliated Retailers, 855 Ave. of America, New York, N.Y.
TYPE SET	Television Receiver
TUBES	Seventeen

POWER SUPPLY 110 - 120 Volts AC - 60 Cycle RATING 1.52 Amp. @ 117 Volts AC
TUNING RANGE - Channels 2 thru 13

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Tube Placement Chart 3
Voltage And Resistance Measurements 6

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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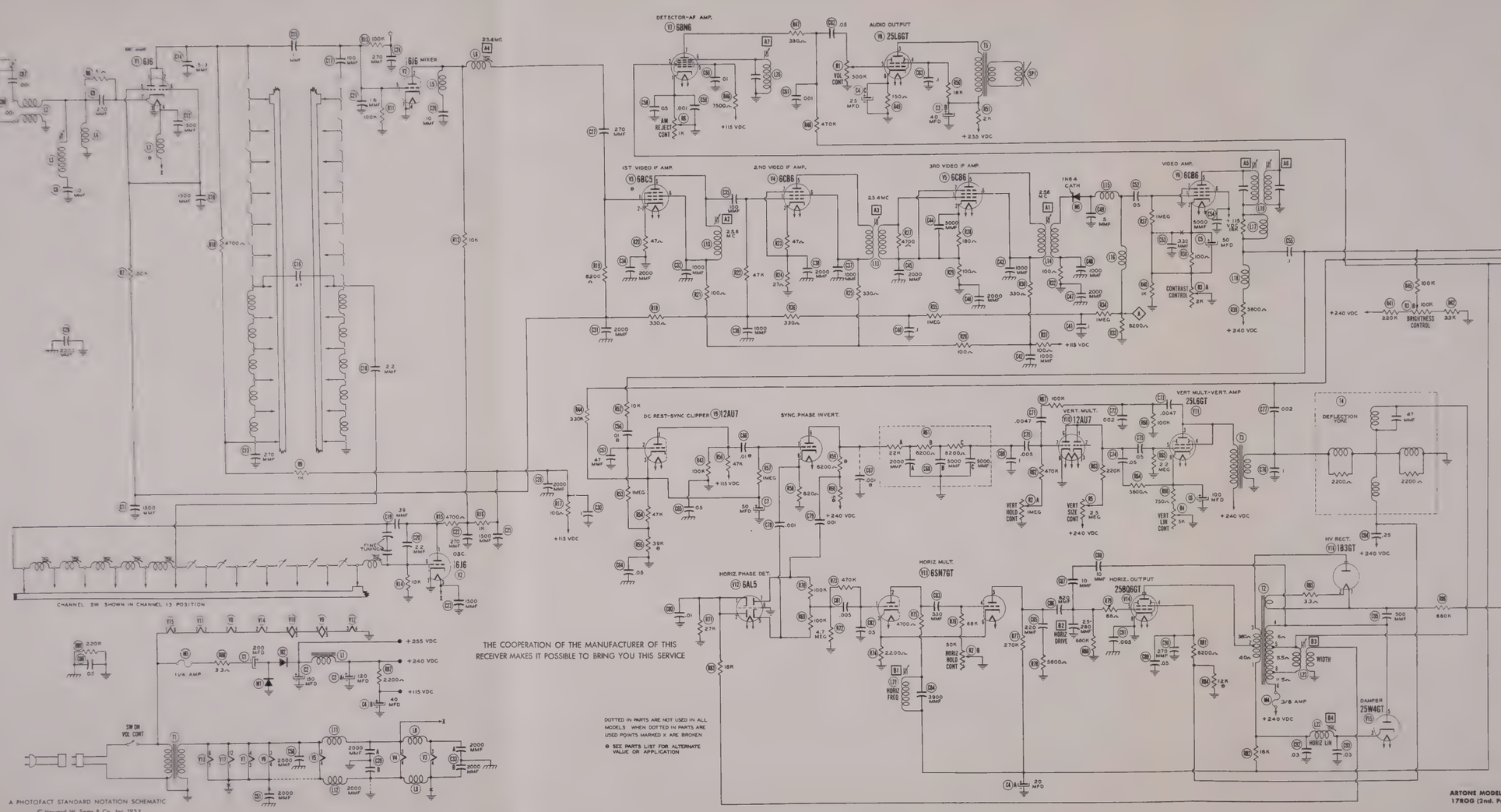

DETECTOR-AF AMP. V7 6BN6
AUDIO OUTPUT V8 25L6GT
1ST VIDEO IF AMP. V3 6BC5
2ND VIDEO IF AMP. V4 6CB6
3RD VIDEO IF AMP. V5 6CB6
VIDEO AMP. V6 6CB6
1N54 CATH
DC REST-SYNC CLIPPER V9 12AU7
SYNC. PHASE INVERT.
VERT. MULT. V10 12AU7
VERT MULT-VERT. AMP 25L6GT V11
HORIZ. PHASE DET. V12 6AL5
HORIZ MULT. V13 6SN7GT
HORIZ. OUTPUT 25BQ6GT
HV RECT. V14 1B3GT
DAMPER 25W4GT V15
6J6 MIXER
6J6
6J6
PICTURE TUBE 17BP4
ION TRAP FOCUS MAGNET
BRIGHTNESS CONTROL
CONTRAST CONTROL
VERT SIZE CONT
VERT LIN CONT
VERT HOLD CONT
HORIZ HOLD CONT
HORIZ DRIVE
HORIZ FREQ
HORIZ LIN
WIDTH
AM REJECT CONT
VOL CONT
SW ON VOL CONT
FINE TUNING
DEFLECTION YOKE
+255 VDC
+240 VDC
+115 VDC
+240 VDC
CHANNEL 5W SHOWN IN CHANNEL 13 POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W Sams & Co, Inc. 1952
ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CR8 (2nd. Prod.), 17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001

ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CR8 (2nd. Prod.), 17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001

ARTONE MODELS AR14L, AR17L, 17CD (2nd. Prod.), 17CRR (2nd. Prod.), 17ROG (2nd. Prod.), 20CD (2nd. Prod.), 203D (2nd. Prod.), 1000, 1001

TUBE PLACEMENT CHART

PROPERTY OF
L. F. BLANKENSHIP
3[illegible] MEADE ST.
DENVER, COLORADO

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

Use an isolation transformer to protect the test equipment.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace it with a 6J6 which has pin 1 removed. This will disable the local oscillator and prevent the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to B-.	25.6MC (Unmod.)	Any	DC probe to Point (A). Common to B-.	A1, A2	Adjust for maximum deflection.
2.	"	"	23.4MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to B-.	24MC (10MC SWP)	21.6MC 25.6MC 26.1MC	Any	Vert. amp. to Point (A). Low side to B-.		Check for response curve similar to figure 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT

Tune in a TV station and connect an attenuator in series with the antenna.

Attenuate the input until the sound signal drops below the limiting level of the 6BN6, this will be indicated by a hiss similar to superregeneration.

Adjust the sound take off transformer (A5 and A6) for maximum audio.

Adjust the quadrature coil (A7) for bestquality audio.

Adjust the AM rejection control for MINIMUM intercarrier buzz.

If during any of the above adjustments the signal rises above the limiting level, as indicated by the hiss disappearing, reduce the signal input until the hiss returns.

THE RF AND OSCILLATOR PORTION OF THIS RECEIVER HAS BEEN PRE-SET AT THE FACTORY AND IS VERY STABLE. ALIGNMENT OF THIS PORTION IN THE FIELD IS NOT RECOMMENDED. IF MIS-ALIGNMENT OF THE TUNER IS SUSPECTED, CONSULT THE RECEIVER MANUFACTURER.

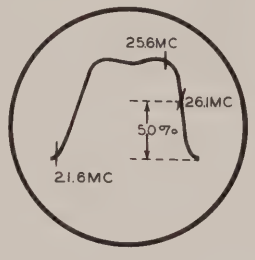


FIG. 1

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Turn the horizontal hold control to the mid-position of its range.

Adjust the horizontal frequency slug (B1) until the picture synchronizes horizontally.

Turn the hold control to maximum clockwise, then slowly counter clockwise. The picture should synchronize after approximately 1/4 turn and should show 3 or 4 sloping bars just before the picture synchronizes.

Turn the hold control to maximum counter-clockwise and repeat the check. The picture should fall into sync after approximately 1/4 turn from each extreme , and should show, in each case, 3 or 4 sloping bars at the pull in point.

Adjust the horizontal drive trimmer (B2) for the best compromise between brightness and horizontal linearity.

Adjust the width slug (B3) until the picture fills the mask.

Adjust the horizontal linearity slug (B4) until the picture is symmetrical from left to right.

Slight readjustment of B2 may be necessary to obtain optimum results.

CHASSIS TOP VIEW

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	95VDC	95VDC	0V	6.3VAC	-1.6VDC	-1.6VDC	.3VDC		
V 2	6J6	90VDC	85VDC	6.3VAC	0V	-1.6VDC	§-4.2VDC	0V		
V 3	6BC5	-.6VDC	.1VDC	6.3VAC	0V	110VDC	110VDC	.1VDC		
V 4	6CB6	-.6VDC	.6VDC	6.3VAC	0V	105VDC	105VDC	.2VDC		
V 5	6CB6	.8VDC	2.3VDC	6.3VAC	0V	107VDC	107VDC	.8VDC		
V 6	6CB6	.5VDC	9.4VDC	6.3VAC	0V	190VDC	115VDC	0V		
V 7	6BN6	8VDC 0V	0V	0V	6.3VAC	65VDC 60VDC	0V	360VDC 20VDC		
V 8	25L6GT	0V	45VAC	140VDC	115VDC	0V	0V	69VAC	8VDC	
V 9	12AU7	75VDC	.6VDC	9.5VDC	6VAC	6VAC	150VDC	1.8VDC	12VDC	12VAC
V 10	12AU7	175VDC 35VDC	0V	0V	12VAC	12VAC	175VDC 35VDC	-40VDC -3VDC	0V	19VAC
V 11	25L6GT	0V	69VAC	235VDC 215VDC	235VDC 215VDC	0V	240VDC 20VDC	92VAC	30VDC 20VDC	
V 12	6AL5	.1VDC	.1VDC	6VAC	0V	4.6VDC	0V	-3.8 VDC		
V 13	6SN7GT	.2VDC	320VDC	15VDC	-3.2VDC	125VDC	15VDC	0V	6.3VAC	
V 14	25BQ6GT	0V	45VAC	0V	145VDC	-28VDC	0V	19VAC	0V	TOP CAP *
V 15	25W4GT	0V	0V	480VDC	0V	235VDC	235VDC	117VAC	92VAC	
V 16	1B3GT	* DO NOT MEASURE								
V 17	17BP4	0V	3.8VDC	PIN 10 355VDC	PIN 11 90VDC	PIN 12 6.3VAC				

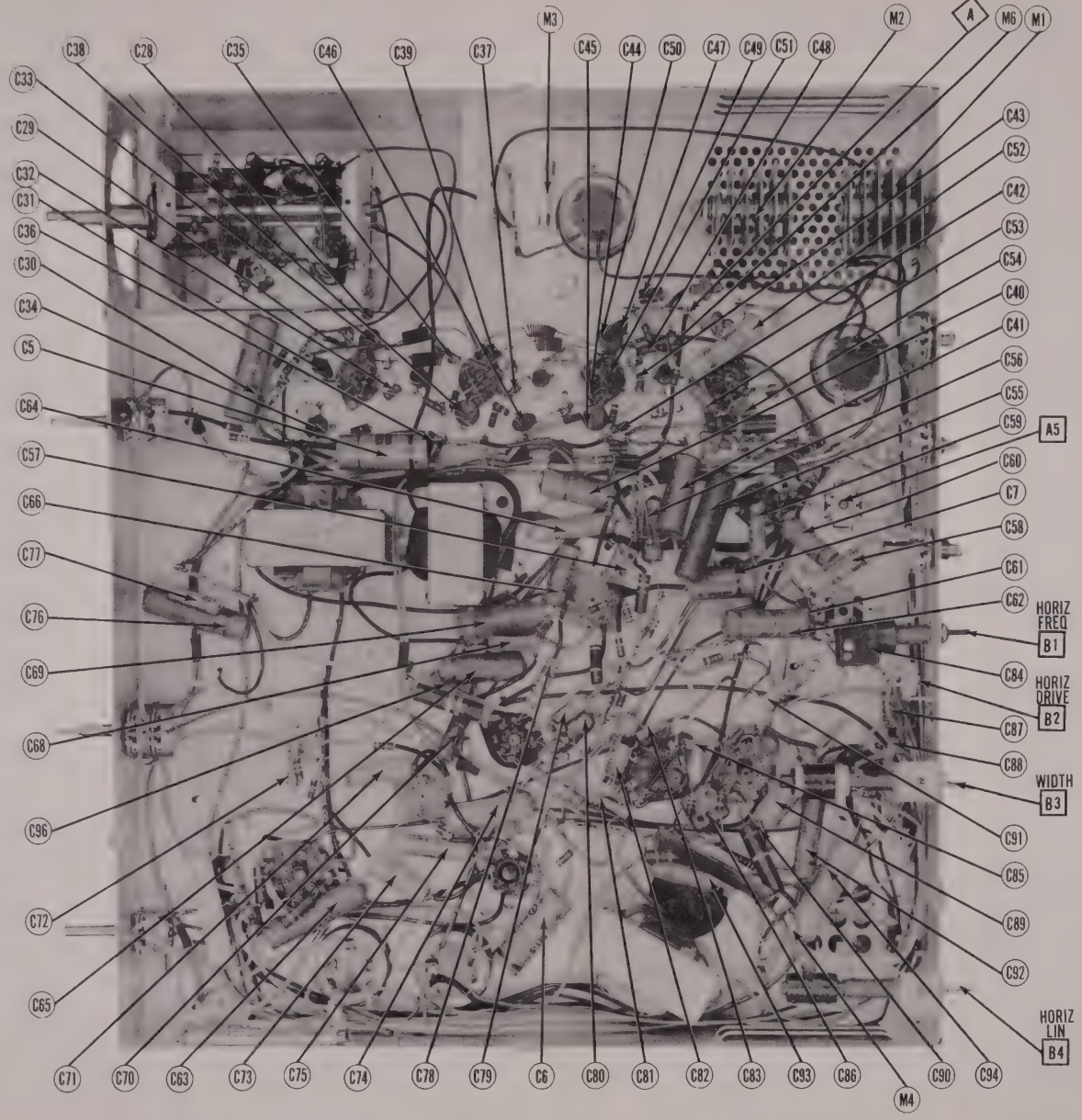
§ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT MEASURE
VOLTAGE AND RESISTANCE MEASUREMENT ARE TAKEN WITH PICTURE TUBE REMOVED.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	†3.4KΩ	†3.4KΩ	0Ω	.2Ω	2.2Meg	2.2Meg	55Ω		
V 2	6J6	†8KΩ	†13KΩ	.2Ω	0Ω	100KΩ	10KΩ	0Ω		
V 3	6BC5	2Meg	47Ω	.2Ω	0Ω	†2.6KΩ	†2.6KΩ	47Ω		
V 4	6CB6	2Meg	75Ω	.2Ω	0Ω	†2.8KΩ	†2.8KΩ	27Ω		
V 5	6CB6	100Ω	280Ω	.2Ω	0Ω	†2.7KΩ	†2.7KΩ	100Ω		
V 6	6CB6	1Meg	750Ω	.2Ω	0Ω	†5.7KΩ	†2.3KΩ	0Ω		
V 7	6BN6	1KΩ 0Ω	2.6Ω	0Ω	.2Ω	†9.8KΩ	3.8Ω	#490KΩ		
V 8	25L6GT	Inf.	18Ω	†2.3KΩ	†20KΩ	0Ω	Inf.	25Ω	150Ω	
V 9	12AU7	40KΩ	1Meg	40KΩ	5Ω	5Ω	†7.3KΩ	1.1Meg	820Ω	8Ω
V 10	12AU7	†220KΩ †2.7Meg	Inf.	Inf.	8Ω	8Ω	†220KΩ †2.7Meg	1.5Meg	0Ω	11Ω
V 11	25L6GT	Inf.	25Ω	† 720Ω	†720Ω	2.2Meg	† 0Ω †2.5Meg	26Ω	5.8KΩ 750Ω	
V 12	6AL5	11KΩ	11KΩ	5Ω	0Ω	4.8Meg	0Ω	4.8Meg		
V 13	6SN7GT	5.2Meg	†23KΩ	2.2KΩ	120KΩ	†290KΩ	2.2KΩ	0Ω	.2Ω	
V 14	25BQ6GT	Inf.	18Ω	Inf.	†6.3KΩ	680KΩ	5.6KΩ	11Ω	0Ω	TOP CAP #60Ω
V 15	25W4GT	Inf.	Inf.	110KΩ	Inf.	†95Ω	†130Ω	22Ω	26Ω	
V 16	1B3GT	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	Inf.	TOP CAP #420Ω
V 17	17BP4	0Ω	450KΩ	PIN 10 #18KΩ	PIN 11 200KΩ	PIN 12 .2Ω				

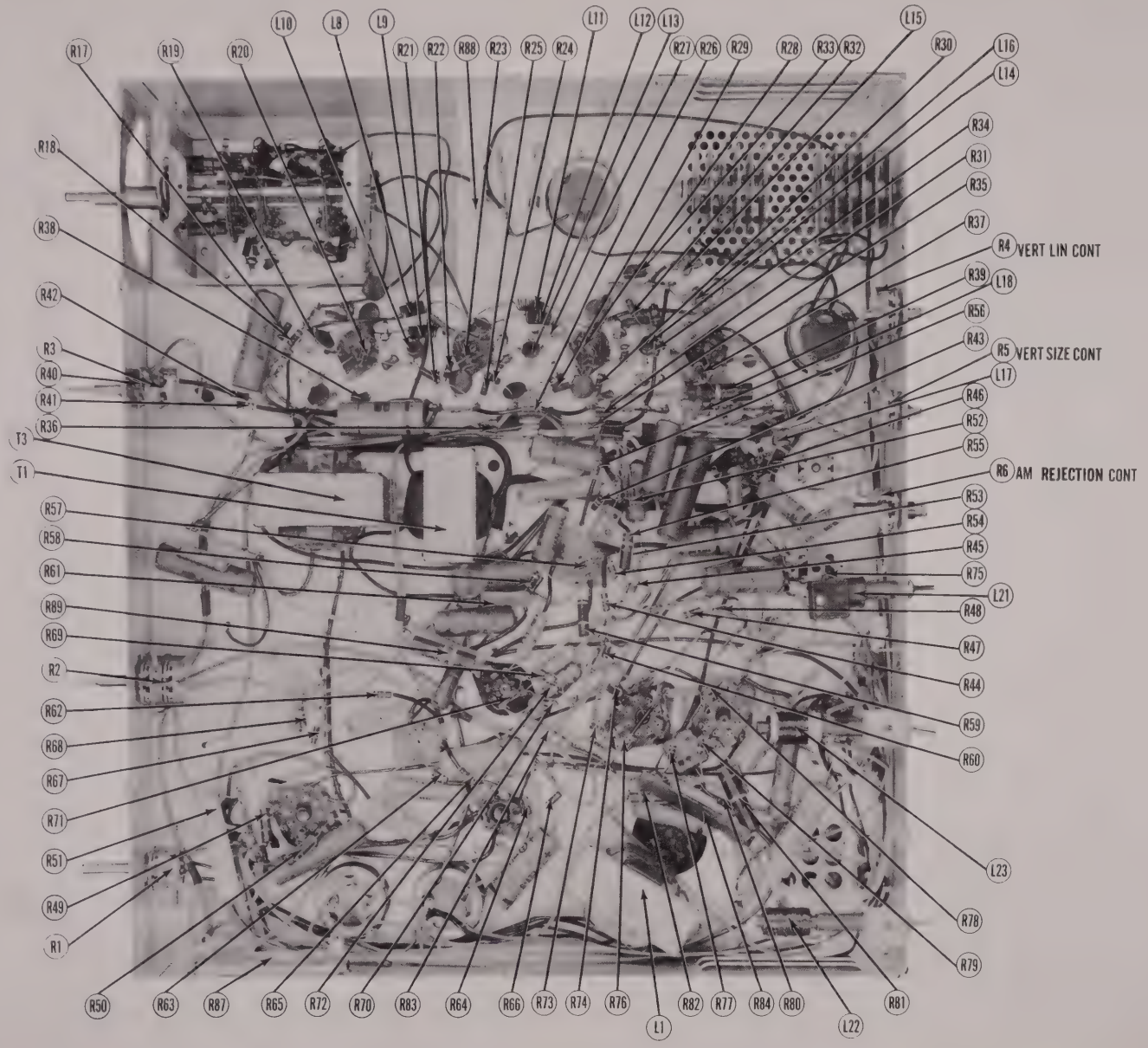
† MEASURED FROM OUTPUT OF M2
# MEASURED FROM PIN 3 OF V15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.

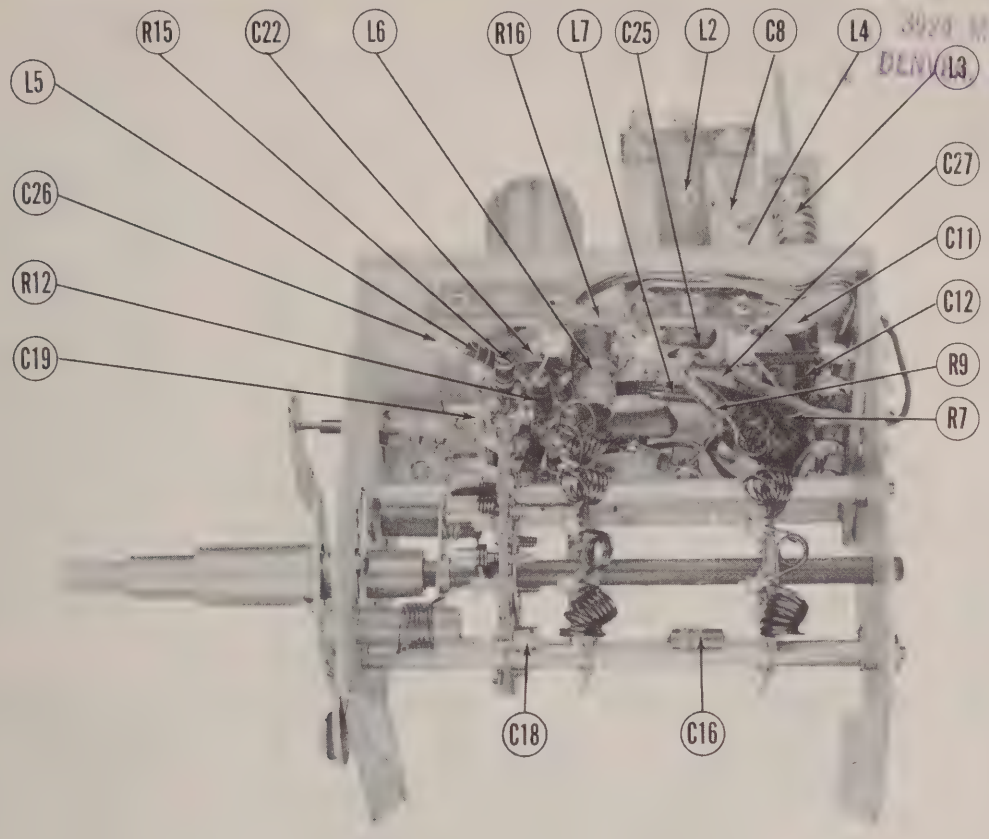


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

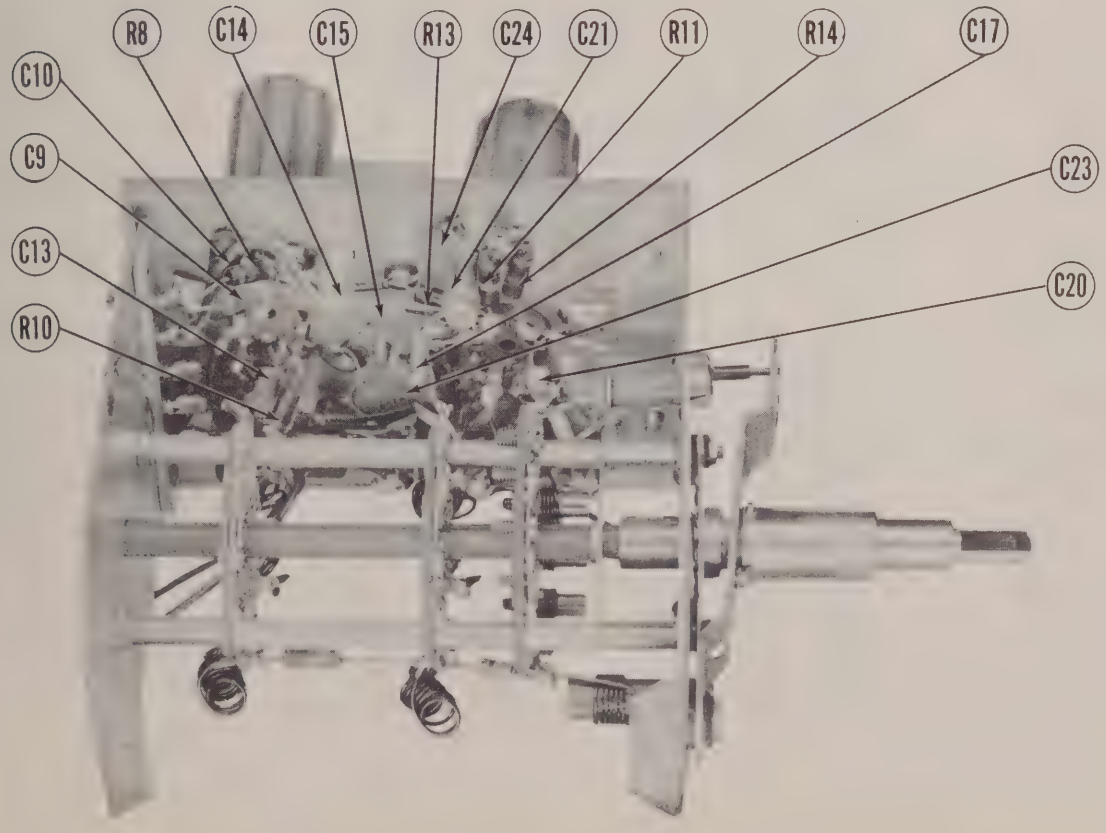
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RF TUNER-RIGHT SIDE



RF TUNER-LEFT SIDE

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: ARTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6J6	6J6	7BF	
V2	Converter	6J6	6J6	7BF	
V3A	1st Video IF Amp.	6BC5	6BC5	7BD	
B	1st Video IF Amp.	6AG5	6AG5	7BD	
V4	2nd Video IF Amp.	6CB6	6CB6	6CK	
V5	3rd Video IF Amp.	6CB6	6CB6	6CK	
V6	Video Amplifier	6CB6	6CB6	6CK	
V7	Detector -AF Amp.	6BN6	6BN6	7DF	
V8	Audio Output	25L6GT	25L6GT	7AC	
V9	DC Restorer - Sync. Clipper - Sync. Phase Inverter	12AU7	12AU7	9A	
V10	Vert. Mult.	12AU7	12AU7	9A	
V11	Vert. Mult.-Vert. Output	25L6GT	25L6GT	7AC	
V12	Horiz. Phase Det.	6AL5	6AL5	6BT	
V13	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V14	Horiz. Output	25BQ6GT	25BQ6GT	6AM	
V15	Damper	25W4GT	25W4GT	4CG	
V16	H.V. Rectifier	1B3GT	1B3GT	7CB	
V17	Picture Tube	17BP4	17BP4	12D	Model AR14L uses 14" picture tube

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ARTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1	200	150		E4A113		UPE1010015		TVL-1431	Voltage Divider Cap
C2	150	300		E4A114		UPE12535		TVL-1584	Filter
C3A	120	300		AFH244G		UPT125430		R1082	▲ Filter
B	40	300		PR8350/30					▲ Filter
C4A	20	450		AFH8824A		UP4345C		TVL-4729	■ Decoupling
B	40	300							■ Filter
C	25	25							▲ Output Cathode
C5	50	25		PR825/50		BR502A		TVA-1206	V. Amp. Cathode
C6	100	25		PR825/100		BRH251A		TVA-1207	Vert. Amp. Cathode
C7	50	25		PR825/50		BR502A		TVA-1206	DC Res. Cathode
C8	10			SI10	D6-100		GP1K-10	19C19	Fixed Trimmer
C9	270			SI270	D6-271		GP2K-270	19C31	RF Amp. Cathode
C10	1500			SI1500	D6-152		GP2L-0015	29C8	AGC Filter
C11	1500			SI1500	D6-152		GP2L-0015	29C8	AGC Filter
C12	1500			SI1500	D6-152		GP2L-0015	29C8	RF Amp. Fil.
C13	270			SI270	D6-271		GP2K-270	19C31	RF Amp. Plate Dec.
C14	.5-3				829-3				Variable Trimmer
C15	1				TCZ-1				RF Coupling
C16	.47				TCZ-.5				RF Coupling
C17	100			SI100	D6-101		GP1K-100	19C11	RF Coupling
C18	2.2			"	TCZ-2.2				Osc. Coupling
C19	39			SI39	D6-390		GP1K-39		Osc. Feedback
C20	2.2				TCZ-2.2				Osc. Feedback
C21	1-6				829-6				Variable Trimmer
C22	270			SI270	D6-271		GP2K-270	19C31	Conv. Decoupling
C23	1500			SI1500	D6-152		GP2L-0015	29C8	Conv. Fil. Bypass
C24	270			SI270	D6-271		GP2K-270	19C31	RF Bypass
C25	1500			SI1500	D6-152		GP2L-0015	29C8	RF Bypass
C26	10			SI10	D6-100		GP1K-10	19C3	Fixed Trimmer
C27	270			SI270	D6-270		GP2K-270	19C31	IF Coupling
C28	2000			SI2000	D6-202	1W5D2	GP2L-002	29C2	RF Bypass
C29	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	RF Bypass
C30	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	RF Bypass
C31	2000			BPD-005	DD-202	1W5D2	80I-002	29C2	AGC Filter
C32	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	1st V. IF Dec.
C33A	2000			BPD-2X001	DD-2-202	1W5D2	812-2X002	29C5	1st V. IF Fil.
B	2000					1W5D2			1st V. IF Fil.
C34	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	RF Bypass
C35	100			SI100	D6-101	5W5T1	GP1K-100	19C11	IF Coupling
C36	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	AGC Filter
C37	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	2nd V. IF Dec.
C38	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	2nd V. IF Cathode
C39A	2000			BPD-2X002	DD-2-202	1W5D2	812-2X002	29C5	2nd V. IF Fil.
B	2000					1W5D2			2nd V. IF Fil.
C40	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C41	.1	200		P288-1	DF-104	PTE4P1		2TM-P1	AGC Filter
C42	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	RF Bypass
C43	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	3rd V. IF Dec.
C44	5000			BPD-005	DD-502	1D5D5	81I-005	29C1	3rd V. IF Cathode
C45	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	3rd V. IF Cathode
C46	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	RF Bypass
C47	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	RF Bypass
C48	1000			SI1000	D6-102	1W5D1	GP2L-001	19C1	RF Bypass
C49	5	500		1468-000005	TCZ-4.7	5W5V5	GP1K-5	MS-55	V. Det. Filter
C50	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	3rd V. IF Fil.
C51	2000			BPD-002	DD-202	1W5D2	80I-002	29C2	3rd V. IF Fil.
C52	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C53	330	500		1468-00035	D6-331	5W5T3	GP2K-330	1FM-335	V. Amp. Cathode
C54	5000			BPD-005	DD-502	1D5D5	81I-005	29C1	RF Bypass
C55	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C56	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Video Coupling *
C57	47	500		1468-00005	D6-471	5W5Q5	GP1K-47	1FM-45	Sync. Clipper-DC Res. Grid
C58	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Det.-AF Amp. Cath.
C59	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Det.-AF Amp. Cathode
C60	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Det.- AF Amp. Screen
C61	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	De-emphasis
C62	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Audio Coupling
C63	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Output Screen
C64	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	RF Bypass
C65	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	RF Bypass
C66	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Sync. Coupling *
C67	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Sync. Phase Inv. Plate †
C68A	2000		‡	P688-002	‡	PTE6D2	GP2M-002	6TM-D2	Integrator Net
B	5000			P688-005	PC-100	PTE6D5	811-005	6TM-D5	Integrator Net
C	5000			P688-005		PTE6D5		6TM-D5	Integrator Net
C69	.1			P686-1	DF-104	PTE6P1		6TM-P1	Integrator Net
C70	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	Vert. MV Grid
C71	.0047	1000		P1088-0047		PTE16D5		MB-D47	Vert. MV Feedback
C72	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Voltage Divider
C73	.0047	1000		P1088-0047		PTE16D5		MB-D47	Vert. MV Feedback
C74	.05	600		P688-05		PTE6S5		6TM-S5	Vert. Discharge
C75	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Vert. Sweep Coupling
C76	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Fixed Trimmer
C77	.002	600		P688-002	D6-202	PTE6D2	GP2M-002	6TM-D2	Vert. Sweep Coupling
C78	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sync. Coupling
C79	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Hor. Sync. Coupling
C80	.01	600		P688-01	D6-103	PTE6S1	821-01	6TM-S1	Voltage Divider
C81	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	AFC Filter
C82	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	AFC Filter
C83	330	500		1468-00035	D6-331	5W5T3	GP2K-330	1FM-335	Hor. MV Feedback
C84	3900	500		1464-004		1DR5D4		MS-24	Fixed Trimmer
C85	220	500		SI220	D6-221	5R5T25	GP2K-220	MS-325	Horiz. Discharge
C86	820	500				1W5T8		MS-38	Horiz. Sweep Coupling
C87	10	1500		1469-HV-0000					Horiz. Feedback
C88	10	1500		1469-HV-0000					Horiz. Feedback
C89	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C90	270	500		SI270	D6-271	5W5T25	GP2K-270	1FM-325	Horiz. Output Screen
C91	.005	600		P688-005	D6-502	PTE6D5	811-005	6TM-D5	RF Bypass
C92	.03	600		P688-03		PTE6S3		6TM-S3	Damper Filter
C93	.03	600		P688-03		PTE6S3		6TM-S3	Damper Filter
C94	.25	400		P488-25		GT4P25		4TM-P25	Hor. Sweep Coupling
C95	500	20000		HV20C	TV2-502				H.V. Filter
C96	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	RF Bypass
C97	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Ant. Coupling
C98	.001	600		P688-001	D6-102	PTE6D1	GP2L-001	6TM-D1	Ant. Coupling

* Some models use .05MFD in this application.
† Not used in all models.
‡ Items C68A, C68B, C68C, R61A, R61B and R61C are combined into one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ		P-7	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A Per Instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A Per Instructions
R2A	1Meg			Concentrikit			Vertical Hold Control - Front
B	50KΩ		PD-5	B11-123 *	RTV-146	SBB-584	Horizontal Hold Control - Rear
C	Shaft End			E-187 *			Attach Per Instructions in "Concentrikit"
R3A	2000Ω			Concentrikit B11-112 *			Contrast Control - Front
B	100KΩ		PD-6	B11-128 *	RTV-253		Brightness Control - Rear
C	Shaft End			E-187 *			Attach Per Instructions in "Concentrikit"
R4A	5000Ω		P-2	Q11-114	AM-19-S	AN-10	Vertical Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A Per Instructions
R5A	2.5Meg		P-5	Q11-239	AG-84-S	AN-83	Vertical Size Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A Per Instructions
R6A	100Ω		P-12	Q11-108	AG-8-S	AN-5	AM Rejection Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R6A Per Instructions

* Additional parts to be used with "Concentrikit".

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ARTONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	150KΩ 20%				RF Amp. Grid
R8	51Ω 5%				RF Amp. Cathode
R9	10000Ω 20%			BTS-1000	RF Amp. Plate Decoupling
R10	4700Ω 20%			BTS-4700	RF Coil Shunt
R11	100KΩ 20%				Mixer Grid
R12	10KΩ 20%				Mixer Plate
R13	100KΩ 20%			BTS-10K	Series Test Point
R14	10KΩ 20%				Osc. Grid
R15	4700Ω			BTS-4700	Osc. Plate
R16	10000Ω 20%			BTS-1000	Decoupling
R17	100Ω 20%			BTS-100	Decoupling
R18	330Ω			BTS-330	AGC Network
R19	82000Ω				1st Video IF Amp. Grid
R20	47Ω				1st Video IF Amp. Cathode
R21	100Ω 20%			BTS-100	1st Video IF Amp. Decoupling
R22	47KΩ				2nd Video IF Amp. Grid
R23	47Ω				2nd Video IF Amp. Cathode
R24	27Ω				2nd Video IF Amp. Cathode
R25	330Ω			BTS-330	2nd Video IF Amp. Decoupling
R26	100Ω 20%			BTS-100	Decoupling
R27	4700Ω			BTS-4700	3rd Video IF Transformer Shunt
R28	180Ω			BTS-180	3rd Video IF Amp. Cathode
R29	100Ω 20%			BTS-100	3rd Video IF Amp. Cathode
R30	330Ω			BTS-330	3rd Video IF Amp. Decoupling
R31	100Ω 20%			BTS-100	Decoupling
R32	100Ω 20%			BTS-100	Video Det. Diode Load
R33	8200Ω 20%			BTS-8200	Video Det. Diode Load
R34	1Meg			BTS-1Meg	AGC Network
R35	1Meg			BTS-1Meg	AGC Network
R36	330Ω			BTS-330	AGC Network
R37	1Meg			BTS-1Meg	Video Amp. Grid
R38	100Ω 20%			BTS-100	Video Amp. Cathode
R39	5600Ω			BTB-5600	Video Amp. Plate
R40	1000Ω			BTS-1000	Contrast Control Shunt
R41	220KΩ			BTS-220K	Voltage Divider
R42	33KΩ			BTS-33K	Voltage Divider
R43	100KΩ			BTS-100K	DC Restorer Diode Load
R44	330KΩ			BTS-330K	Picture Tube Grid
R45	100KΩ			BTS-100K	Picture Tube Cathode
R46	7500Ω	1			AF Amp. Screen
R47	33Ω				Parasitic Suppressor
R48	470KΩ			BTS-470K	AF Amp. Plate
R49	150Ω	1		BTA-150	Output Cathode
R50	18KΩ 20%	1		BTA-18K	Output Screen
R51	2000Ω	10		1 3/4A-2000	Output Decoupling - Wire Wound
R52	10KΩ			BTS-10K	Isolation
R53	1Meg			BTS-1Meg	Sync. Clipper Grid
R54	47KΩ			BTS-47K	Sync. Clipper Cathode
R55	39KΩ	1		BTA-39K	Sync. Clipper Cathode - See Note 1
R56	47KΩ			BTS-47K	Sync. Clipper Plate
R57	1Meg			BTS-1Meg	Sync. Phase Inv. Grid
R58	820Ω			BTS-820	Sync. Phase Inv. Cathode
R59	6200Ω	1			Sync. Phase Inv. Plate - See Note 2
R60	1000Ω			BTS-1000	Sync. Phase Inv. Plate - See Note 3
R61A	22KΩ			BTS-22K	Integrator
B	82000Ω			BTS-8200	Integrator
C	8200Ω			BTS-8200	Integrator
R62	470KΩ 20%			BTS-470K	Vertical Osc. Grid
R63	220KΩ			BTS-220K	Vertical Osc. Plate
R64	5600Ω			BTS-5600	Vertical Peaking
R65	2.2Meg			BTS-2.2Meg	Vertical Output Grid
R66	750Ω				Vertical Output Cathode
R67	100KΩ			BTS-100K	Vertical Feedback
R68	100KΩ			BTS-100K	Differentiator
R69	100KΩ			BTS-100K	Horizontal Phase Det. Diode Load
R70	100KΩ			BTS-100K	Horizontal Phase Det. Diode Load
R71	27KΩ			BTS-27K	Horizontal Phase Det. Diode Load
R72	4.7Meg			BTS-4.7Meg	Horizontal Phase Det. Diode Load
R73	470KΩ			BTS-470K	Horizontal AFC Filter
R74	2200Ω			BTS-2200	Horizontal MV Cathode
R75	4700Ω			BTS-4700	Horizontal MV Plate
R76	68KΩ			BTS-68K	Horizontal MV Grid
R77	270KΩ			BTS-270K	Horizontal MV Plate
R78	5600Ω 20%			BTS-5600	Horizontal Peaking
R79	9Ω				Parasitic Suppressor
R80	680KΩ			BTS-680K	Horizontal Output Grid
R81	6200Ω	2			Horizontal Output Screen
R82	18KΩ	1		BTA-18K	Decoupling
R83	18KΩ	2		BTB-18K	Horizontal Feedback
R84	12KΩ	5		1 3/4A-12K	Voltage Divider - Wire Wound - See Note 4
R85	3.3Ω				HV Rectifier Filament
R86	680KΩ	1			HV Filter
R87	2200Ω	10		1 3/4A-2250	Decoupling - Wire Wound
R88	3.3Ω	5			Surge Limiter - Wire Wound
R89	220KΩ	2		BTB-220K	Isolation

† Items R61A, R61B, T61C, C68A, C68B and C68C are combined into one unit.
Note 1. Some models use 47KΩ resistor in this application.
Note 2. Some models use 4700Ω resistor in this application.
Note 3. Some models use 2200Ω resistor in this application.
Note 4. Some models use 18KΩ resistor in this application.

TRANSFORMER (FILAMENT)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .2A	6.3VAC @ 3.7A						F-633

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	400Ω Tap 40Ω	23Ω Taps 11.5Ω and 17Ω SEC. 2 0Ω					Horiz. Output Trans.
T3	650Ω	10Ω					Vertical Output Trans.
T4A	35Ω						Horiz. Deflection Coil
B	9Ω						Vertical Deflection Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T5	3.6KΩ	3.2Ω	275Ω	.5		A-3877	A-2928 ①	R0-2 ①	① Drill one new mounting hole.

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DENVER, COLORADO

PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.220A	70Ω	4.2 Henries		C-1411 ① ②		TR3300① ②	① Drill new mounting hole ② Mount above chassis.

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	ARTONE PART No.	MERIT PART No.	IRC PART No.	
L2	Ant. Coil	1.3Ω	1.3Ω				
L3	FM Trap	0Ω					
L4	RF Choke	.6Ω				CLA	.82 Microhenry
L5	Conv. Plate Coil	0Ω					
L6	1st Video IF	.6Ω					
L7	Fil. Choke	0Ω					Not used in all models
L8	Fil. Choke	0Ω					
L9	Fil. Choke	0Ω					
L10	2nd Video IF	.2Ω					
L11	Fil. Choke	0Ω					
L12	Fil. Choke	0Ω					
L13	3rd Video IF	.3Ω	.3Ω				
L14	4th Video IF	.4Ω	.4Ω				
L15	Peaking	7.4Ω		LP-9			
L16	Peaking	9.8Ω		LP-10			
L17	Peaking	8.3Ω		LP-11			Wound on 18KΩ resistor
L18	Peaking	11Ω		LP-12			
L19	Sound IF	2.7Ω	2.6Ω	LTO-3			
L20	Quadrature Coil	3.8Ω		LIF-8			
L21	Horiz. Freq.	49Ω					
L22	Horiz. Lin.	22Ω					
L23	Width Coil	28Ω	28Ω				

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT	ARTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	
M1	.225A		NF-5	6Q4	1028A	
M2	.225A		NF-5	6Q4	1028A	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA						
			ARTONE PART No.		LITTELFUSE PART No.		BUSS PART No.		
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER	
M3	3AG	1 1/4A			31501.5		MDV 1 1/4		
M4	3AG	.375A			318.375		GJV 3/8		

MISCELLANEOUS

ITEM No.	PART NAME	ARTONE PART No.	NOTES
M5	RF Tuner		
M6	Crystal		1N-64 (Video Detector)
M7	Focus Magnet	LF-7	
M8	Ion Trap		
B2	Trimmer	CT-1	Horizontal Drive (25-280MMF)

PHOTOFACT* Folder

HALLICRAFTERS
MODEL 1025 (Ch. C1000D)

L. F. D.
DENVER, COLORADO

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MODEL 1025

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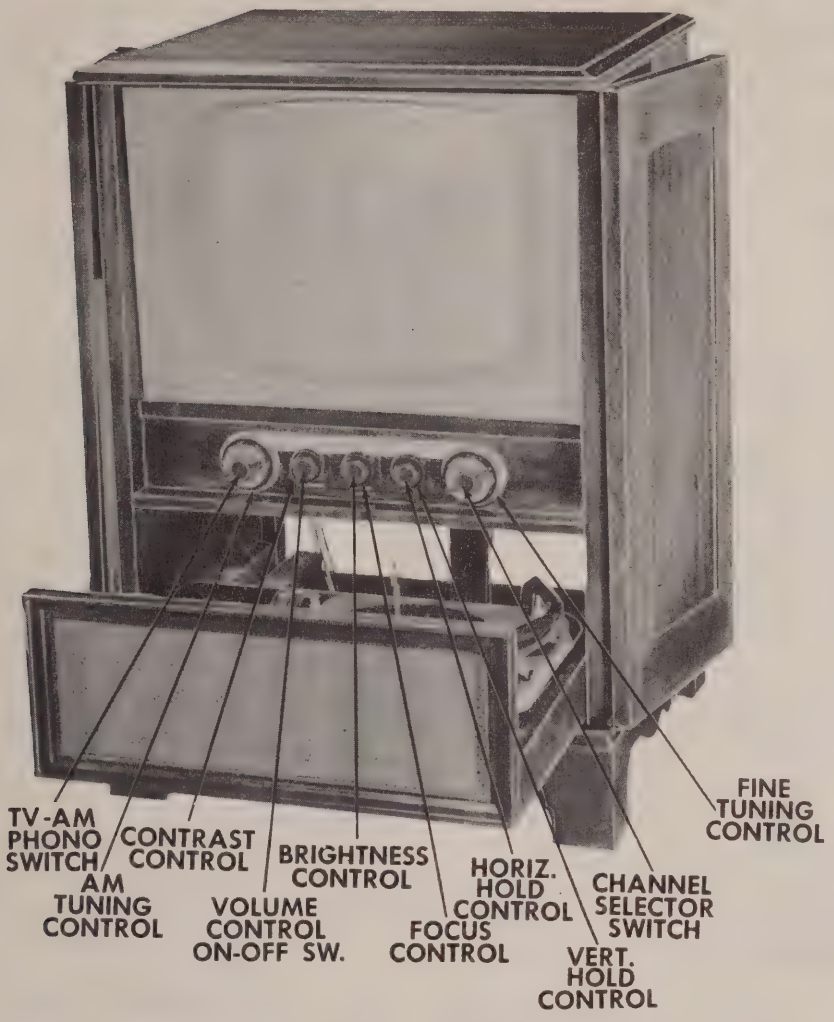
DATE 7-52 SET 172 FOLDER 4



HALLICRAFTERS
MODEL 1025 (Ch. C1000D)

TRADE NAME	Hallicrafters Model 1025 (Ch. C1000D)
MANUFACTURER	Hallicrafters Co., 4401 W. 5th. Ave., Chicago 24, Ill.
TYPE SET	TV-AM - Phono Combination
TUBES	Twenty Four
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 1.74 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13(TV) 540 - 1600KC (AM)

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FOR SERVICE INFORMATION ON RECORD CHANGER SEE SERIES 700F 33/45 PHOTOFACT SET 75 FOLDER 11 OR RECORD CHANGER MANUAL CM-3.

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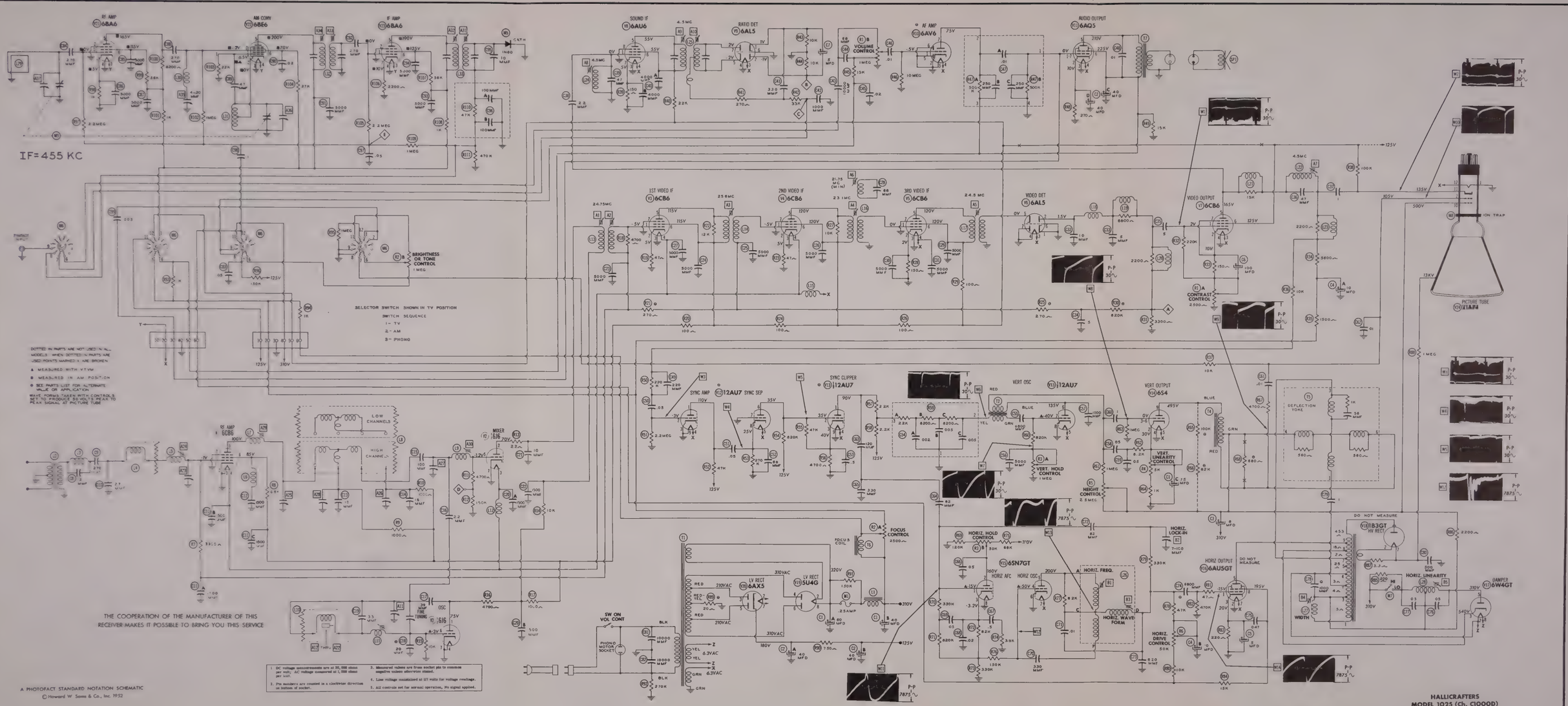
IF=455 KC
SELECTOR SWITCH SHOWN IN TV POSITION
SWITCH SEQUENCE
1- TV
2- AM
3- PHONO
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED ▲ ARE BROKEN
▲ MEASURED WITH VTVM
B MEASURED IN AM POSITION
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
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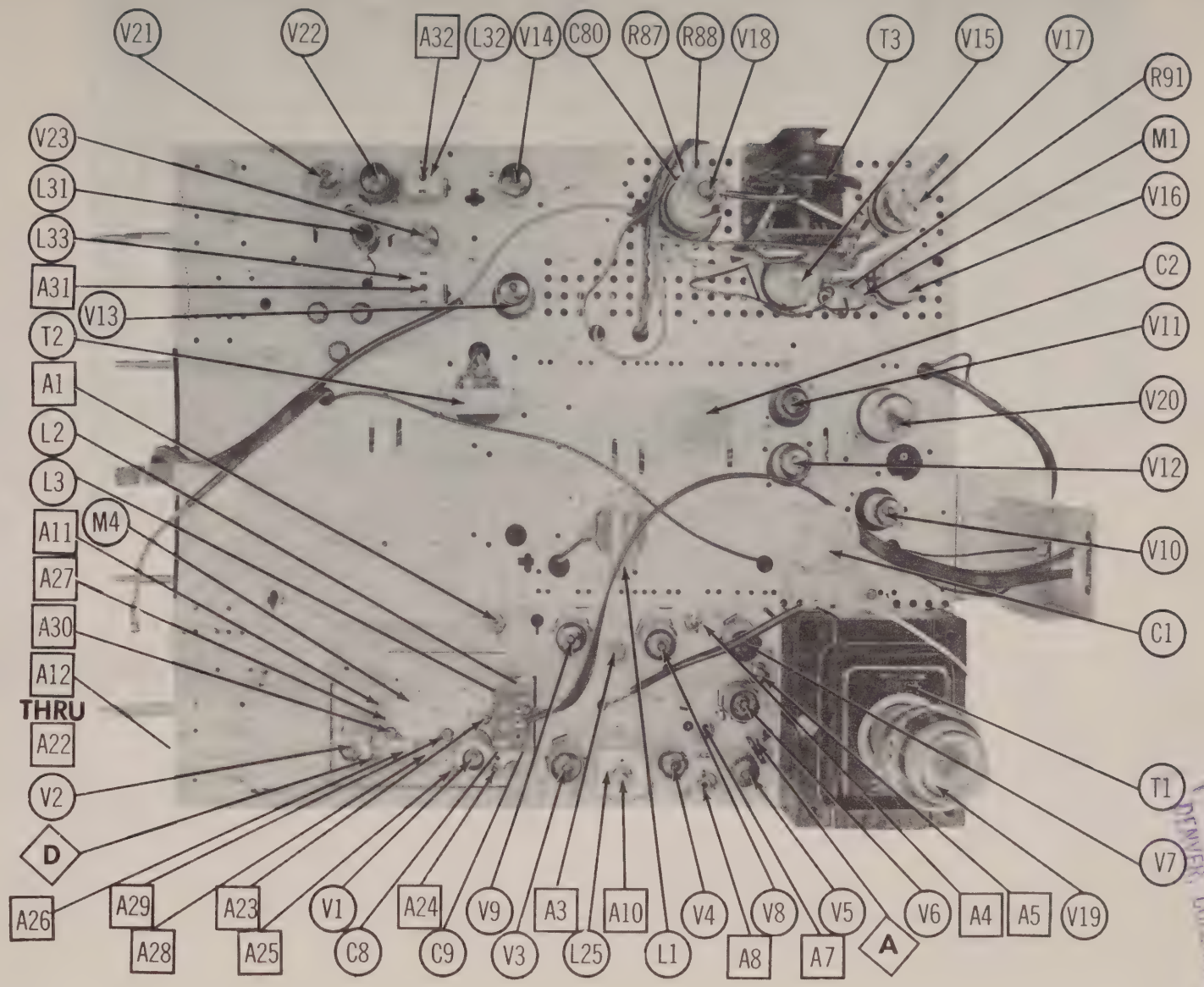

CHASSIS TOP VIEW

MODEL 1025 (Ch. C1000D)

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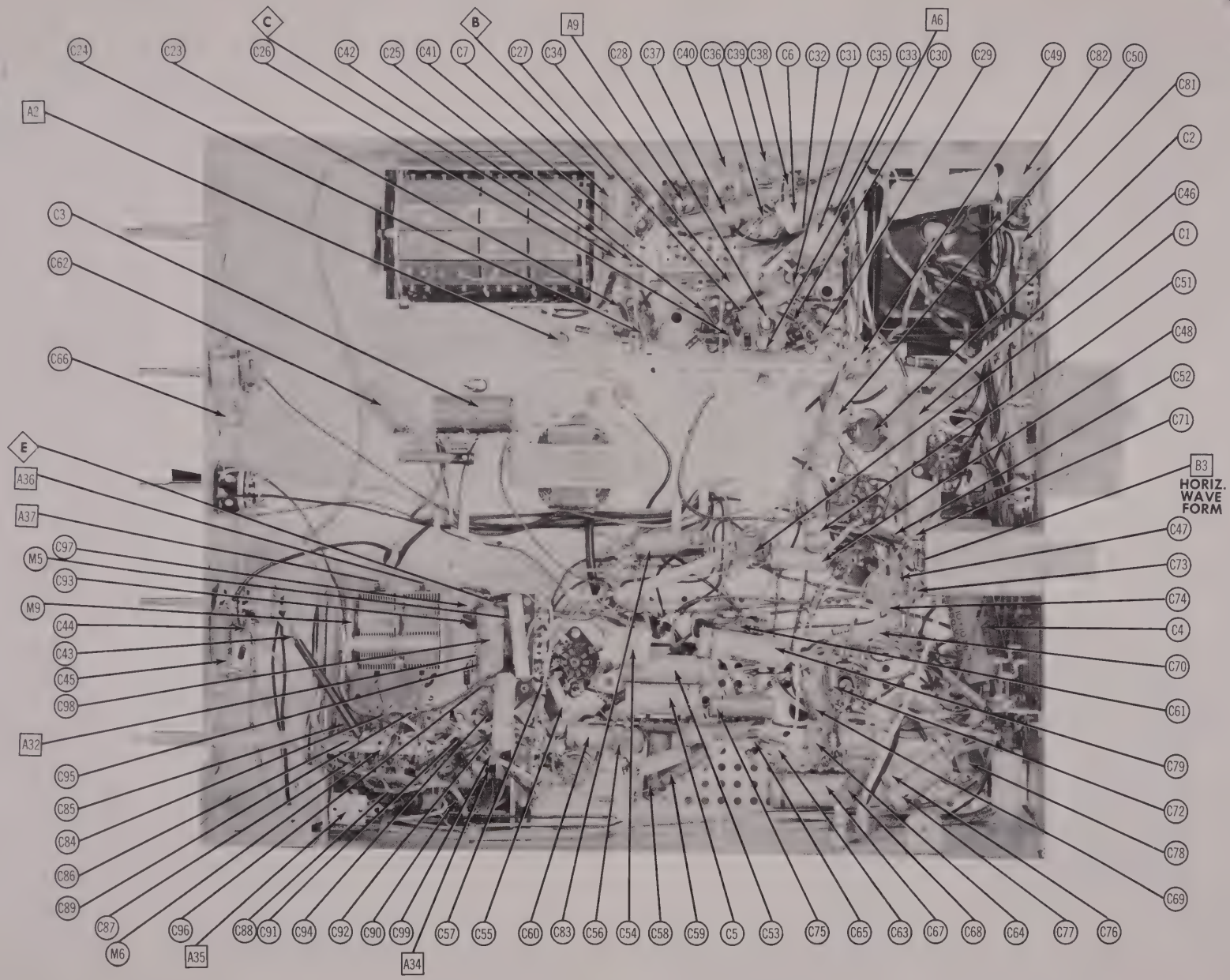


CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube, V15.
The bottom tuning cores of L13 and L16 are concealed by wax. It will be necessary to remove this wax before alignment and replace it after alignment is completed.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Avoid resonating the coils near the outer limit of their adjustment range.
Since the first video IF transformer is overcoupled, it is necessary to load the windings alternately when adjusting it, that is, connect a 100Ω resistor across the primary while adjusting the secondary and across the secondary while adjusting the primary.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24.75MC (unmod.)	Any	DC probe to Point ◇ Common to chassis.	A1, A2	See Note above. Adjust for maximum deflection. Attenuate generator output to maintain 2 volt reading on VTVM.
2	"	"	25.6MC	"	"	A3	Adjust for maximum deflection
3	"	"	23.1MC	"	"	A4	"
4	"	"	24.5MC	"	"	A5	"
5	"	"	21.75MC	"	"	A6	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC swp.)	21.75MC 26.25MC	Any	Vert. amp. to Point ◇ Low side to chassis.		Check for response curve as per fig. 1. with 21.75MC at not more than 10% and 26.25MC at 50% response. If necessary, readjust A1 thru A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7	.005MFD	High side to Point (A) Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru crystal diode detector (fig.2) to pin 11 of picture tube. Common to chassis.	A7	Adjust for MINIMUM deflection. Attenuate generator output to maintain 1 volt reading on VTVM.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8	.005MFD	High side to Point (A) Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (B) Common to chassis.	A8, A9	Adjust for maximum deflection.
9	"	"	"	"	DC probe to Point (C) Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 80% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8	.005MFD	High side to Point (A) Low side to chassis.	4.5MC (450KC swp).	4.5MC	Any	Vert. amp. to Point (B) Low side to chassis.	A8, A9	Disconnect stabilizor capacitor C7. Adjust for maximum amplitude and symmetry of response curve as per fig. 3.
9	"	"	"	"	"	Vert. amp. to Point (C) Low side to chassis.	A10	Reconnect capacitor C7. Adjust A10 so that 4.5MC occurs at center of crossover lines as per fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the negative lead of a 1.5 volt battery to terminal 1 of the terminal strip on the tuner. Connect the positive lead to chassis.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp to point (A) Low side to chassis.	A11	Adjust to place sound marker in "notch" as shown in fig. 5.
11	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"	A12	Adjust to place sound marker in "notch" as per fig. 5. If any channel strip adjustment shows insufficient range readjust A11 for that channel, then repeat all other channel strip adjustment.
			201MC (10MC Swp)	199.25MC 203.75MC	11		A13	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A14	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A15	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A16	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A17	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A18	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A19	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A20	
			63MC (10 MC Swp)	61.25MC 65.75MC	3		A21	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A22	

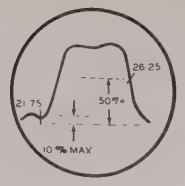


FIG. 1

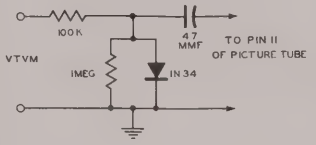


FIG. 2

FIG. 3

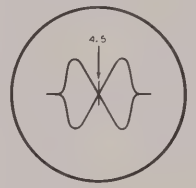


FIG. 4

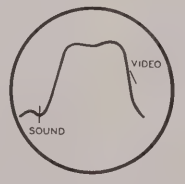


FIG. 5

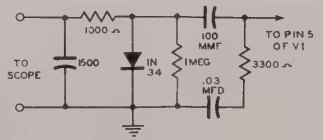


FIG. 6

TV ALIGNMENT INSTRUCTIONS (CONT.)

ANTENNA CIRCUIT ALIGNMENT

Connect 1.5 volt bias battery as in oscillator alignment.
Preset A26 and A28 to maximum clockwise position.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC swp.)	83.25MC 87.75MC	6	Vert. amp. thru detector probe (fig.6) to pin 5 (plate) of 6CB6 (V1). Low side to chassis.	A23	Adjust for symmetrical response curve similar to fig. 7.
13	"	"	177MC (10MC swp.)	175.25MC 179.75MC	7	"	A24	Adjust for response curve similar to fig. 8. If A24 requires a large adjustment repeat steps 12 and 13.
14.	"	"	79MC (10MC swp.)	75.25MC 81.75MC	5	"		Check all low band channels for response similar to fig. 7. If necessary make compromise adjustment of A23 for best overall response.
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			
15.	"	"	183MC (10MC swp.)	181.25MC 185.75MC	8	"		Check all high band channels for response similar to fig. 8. If necessary make compromise adjustment of A24 for best overall response. If A24 is changed recheck all low band channels.
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			207MC (10MC swp.)	205.25MC 209.75MC	12			
			213MC (10MC swp.)	211.25MC 215.75MC	13			

RF ALIGNMENT

Connect 1.5 volt bias battery as in Oscillator Alignment.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
16	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	85MC (10MC Swp)	83.25MC 87.75MC	6	Vert. amp. to point (D) Low side to chassis.	A25, A26 A27	Adjust for response curve similar to fig. 9 A25 affects the center frequency of the response curve, A27 the tilt and A26 the band width.
17.	"	"	79MC (10MC Swp)	77.25MC 81.75MC	5	"		Check for response similar to fig. 9. If necessary make slight compromise adjustments of A25, A26 and A27 for best overall response.
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			
18.	"	"	207MC (10MC swp.)	205.25MC 209.75MC	12	"	A28, A29 A30	Adjust for response curve similar to fig. 10 A29 controls the center frequency, A30 the tilt and A28 the band width.
19.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check for response similar to fig. 10. If necessary make compromise adjustments of A28, A29 and A30. Recheck low band channels and repeat steps 16 thru 19 if necessary.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			

FIG. 7

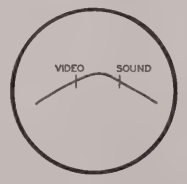


FIG. 8

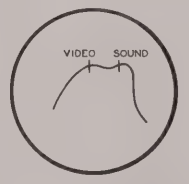


FIG. 9

FIG. 10

HALLICRAFTERS
MODEL 1025 (Ch. C1000D)

RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	820K	0Ω	0Ω	.1Ω	¶2KΩ	¶7.8KΩ	0Ω		
V 2	6J6	¶7KΩ	¶12KΩ	.1Ω	0Ω	150KΩ	10KΩ	0Ω		
V 3	6CB6	820K	47Ω	0Ω	.1Ω	¶950Ω	¶950Ω	0Ω		
V 4	6CB6	820K	47Ω	0Ω	.1Ω	¶850Ω	¶850Ω	0Ω		
V 5	6CB6	.1Ω	150Ω	0Ω	.1Ω	¶850Ω	¶850Ω	0Ω		
V 6	6AL5	0Ω	3.3KΩ	.1Ω	0Ω	.3Ω	0Ω	0Ω		
V 7	6CB6	220KΩ	1KΩ	.1Ω	0Ω	†9.5KΩ	¶750Ω	1KΩ		
V 8	6AU6	.9Ω	0Ω	0Ω	.1Ω	¶22KΩ	¶22KΩ	150Ω		
V 9	6AL5	10KΩ	10KΩ	.1Ω	.0Ω	INF	0Ω	INF		
V 10	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†500KΩ		
V 11	6AQ5	500KΩ	270Ω	0Ω	.1Ω	†1.6KΩ	†1.2KΩ	500KΩ		
V 12	12AU7	¶47KΩ	2.2Meg	0Ω	.1Ω	.1Ω	50KΩ	0Ω	270KΩ	0Ω
V 13	12AU7	¶5.1KΩ	50KΩ	4.7KΩ	.1Ω	.1Ω	#1.8Meg	1.3Meg	0Ω	0Ω
V 14	6S4	INF	3.2KΩ	1Meg	0Ω	.1Ω	1Meg	INF	INF	#3.7KΩ
V 15	6SN7GT	1.5Meg	†60KΩ	410KΩ	480KΩ	†65KΩ	0Ω	.1Ω	0Ω	
V 16	6AU5GT	470KΩ	0Ω	220Ω	INF	#18Ω	INF	.1Ω	†15KΩ	
V 17	6W4GT	INF	INF	400KΩ	INF	†77Ω	INF	#27Ω	#27Ω	
V 18	1133GT	PINS 1-8 HAVE INF RESISTANCE								TOP CAP #471Ω
V 19	5U4G	INF	15KΩ	INF	44Ω	INF	45Ω	INF	15KΩ	
V 20	6AX5GT	#33Ω	0Ω	35Ω	INF	36Ω	#33Ω	.1Ω	80KΩ	
V 21	6BA6	3.6Meg	0Ω	.1Ω	0Ω	■¶10KΩ	■¶57KΩ	1KΩ		
V 22	6BE6	22KΩ	.6Ω	0Ω	.1Ω	■¶750Ω	■¶27KΩ	2.5Meg		
V 23	6BA6	3.6Meg	0Ω	.1Ω	0Ω	■¶1.7KΩ	■¶57KΩ	2.2KΩ		
V 24	21AP4	0Ω	¶260KΩ	PIN 10 #2.2KΩ	PIN 11 ¶100KΩ	PIN 12 .1Ω				

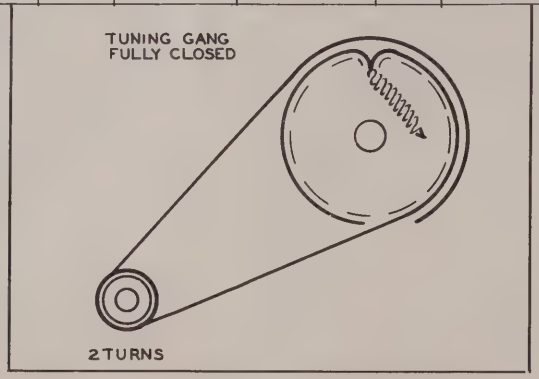
ALL MEASUREMENTS TAKEN IN "TV" POSITION UNLESS NOTED
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V19
¶ MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V17
■ MEASURED IN "AM" POSITION
HI-LO-LINE SWITCH IN "HI" POSITION

RADIO ALIGNMENT INSTRUCTIONS

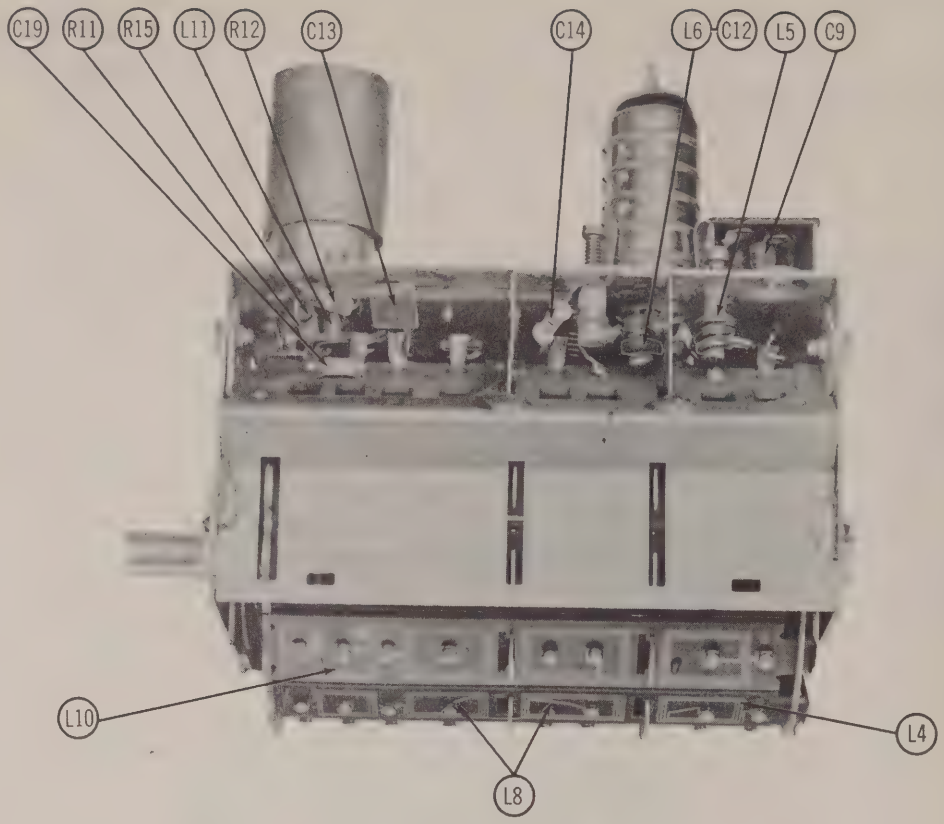
ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the function selector switch to "AM" position.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

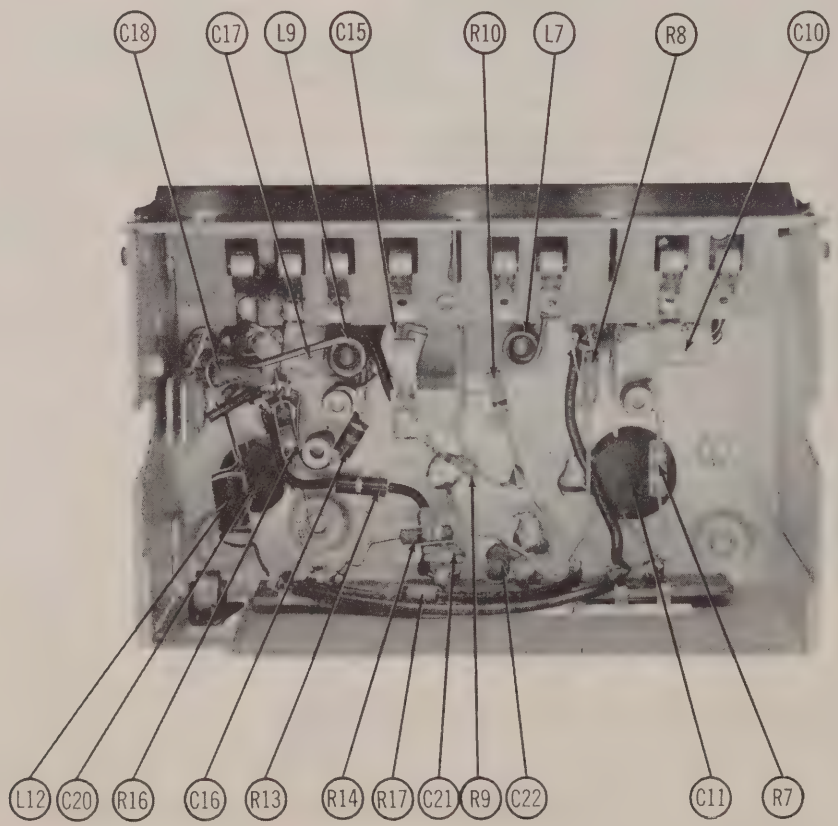
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
20	.01MFD	High side to pin 7 (grid) of 6BE6 (V23). Low side to chassis.	455KC (400~Mod.)	AM	1000KC	DC probe to Point E ◇ Common to chassis.	A31, A32 A33, A34	Adjust for maximum deflection.
21.	"	High side to stator of front section of tuning gang. Low side to chassis.	"	"	"	"	A35	Adjust for MINIMUM deflection.
22.		Loop	1600KC	"	1600KC	"	A36, A37	Fashion loop of several wire and radiate signal into loop of receiver. Adjust for maximum deflection.



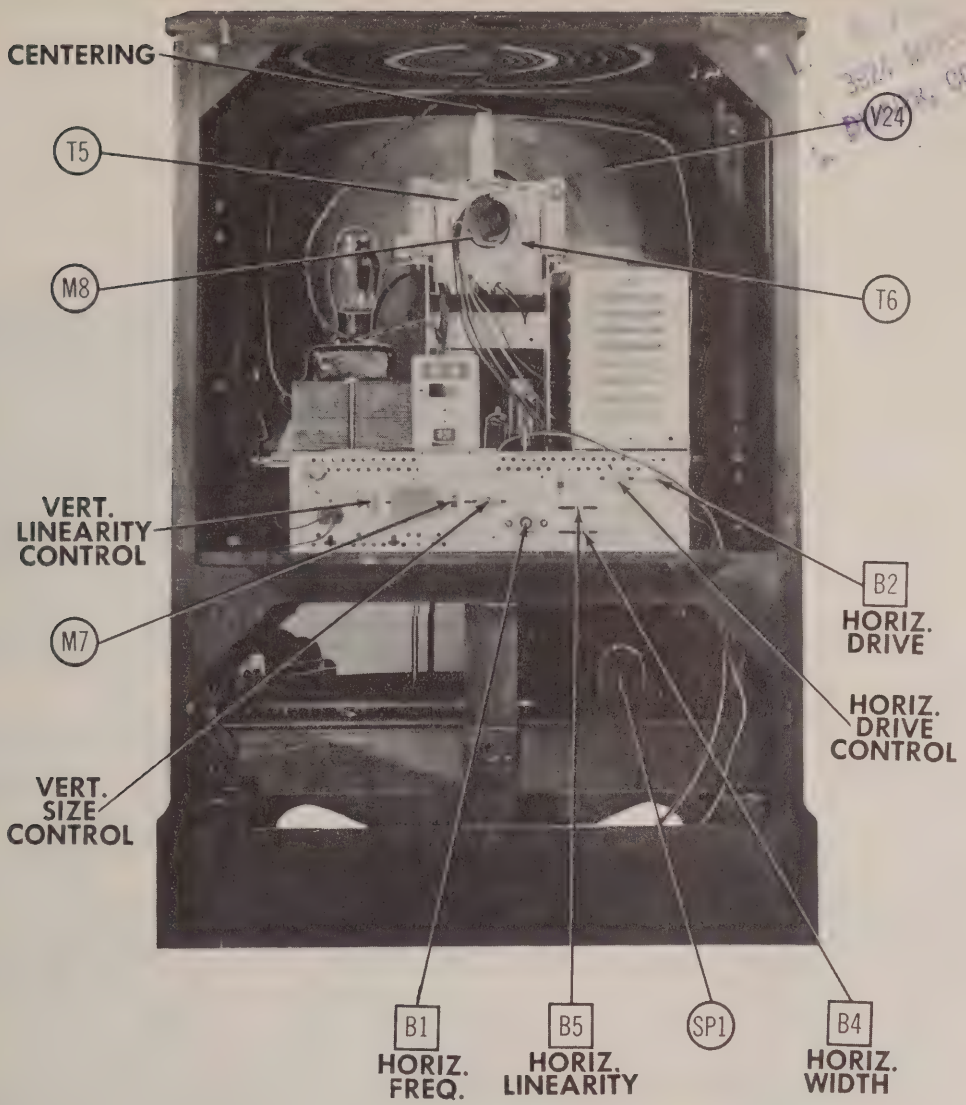
DIAL CORD STRINGING



RF TUNER-LEFT SIDE



RF TUNER-BOTTOM VIEW

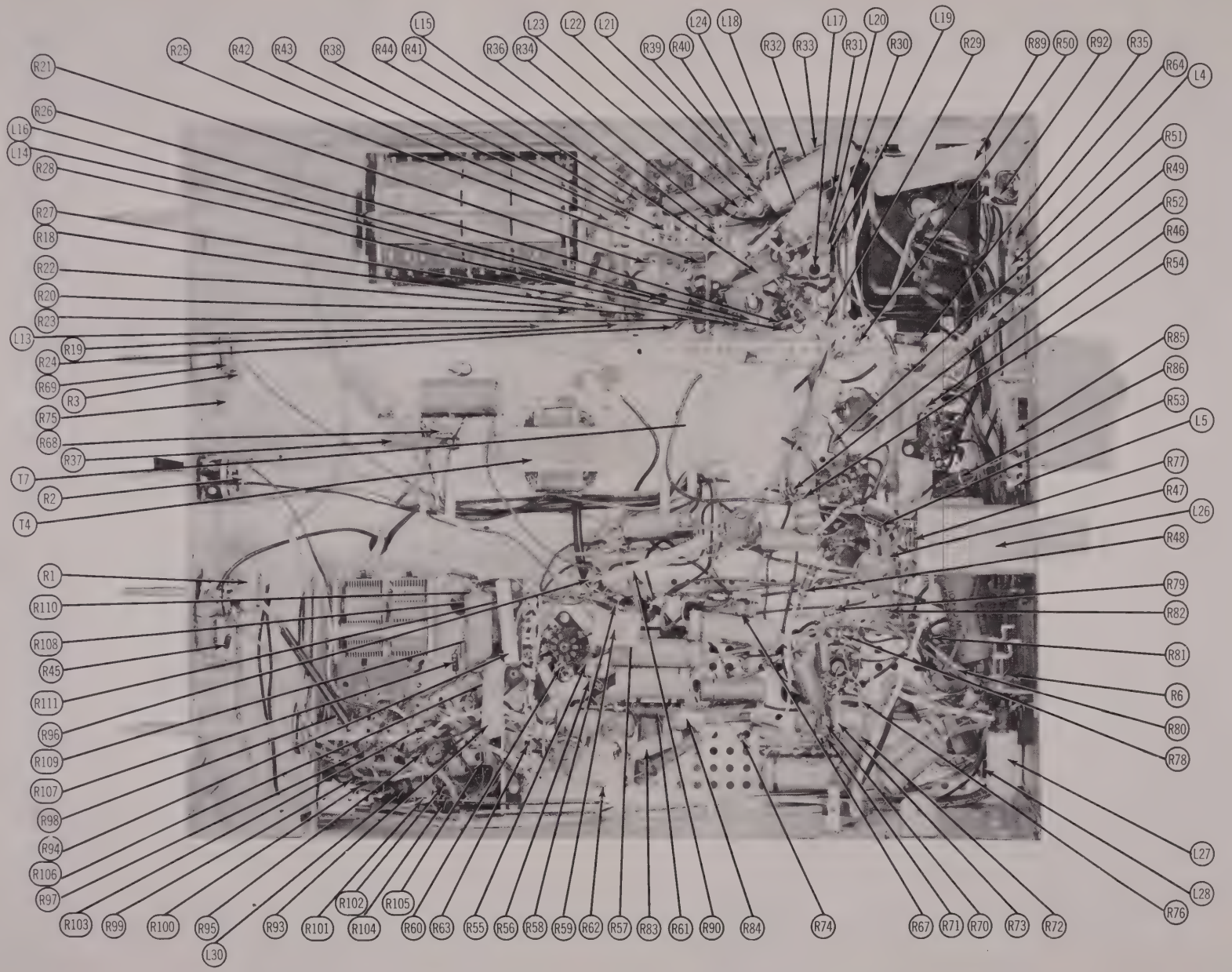


CABINET-REAR VIEW

DISASSEMBLY INSTRUCTIONS

1. Remove 10 push on type control knobs from front panel.
2. Remove 8 wood screws and one metal screw. Remove rear cover.
3. Disconnect AM antenna, phono-motor plug, audio plug and speaker plug.
4. Remove 5 chassis bolts. Remove chassis.
5. Remove 5 wood screws. Remove speaker cover .
6. Remove 4 wood screws. Remove speaker.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

PROPERTY
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Hallicrafter PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	90X6CB6	6CB6	7CH	
V2	Converter	90X6J6	6J6	7BF	
V3	1st. Video IF Amp.	90X6CB6	6CB6	7CH	
V4	2nd. Video IF Amp.	90X6CB6	6CB6	7CH	
V5	3rd. Video IF Amp.	90X6CB6	6CB6	7CH	
V6	Video Detector	90X6AL5	6AL5	6BT	
V7	Video Output	90X6CB6	6CB6	7CH	
V8	Sound IF Amp.	90X6AU6	6AU6	7BK	
V9	Ratio Detector	90X6AL5	6AL5	6BT	
V10A	AF Amplifier	90X6AV6	6AV6	7BT	
B	AF Amplifier	90X6SQ7	6SQ7	8Q	
V11	Audio Output	90X6AQ5	6AQ5	7BZ	
V12A	Sync Amplifier - Sync. Seperator	90X12AU7	12AU7	9A	
B	Sync Amplifier Sync Separator -	90X6SN7GT	6SN7GT	8BD	
V13A	Sync Clipper - Vert. Oscillator	90X12AU7	12AU7	9A	
B	Sync Clipper - Vert. Oscillator	90X6SN7GT	6SN7GT	8BD	
V14	Vert. Output	90X6S4	6S4	9AC	
V15	Horiz. AFC-Horiz. Oscillator	90X6SN7GTA	6SN7GTA	8BD	
V16	Horiz. Output	90X6AU5GT	6AU5GT	7BD	
V17	Damper	90X6W4GT	6W4GT	4CG	
V18	HV Rectifier	90X1B3GT	1B3GT	3C	
V19	L.V. Rectifier	90X5U4G	5U4G	5T	
V20	L.V. Rectifier	90X6AX5GT	6AX5GT	6S	
V21	RF Amplifier	90X6BA6	6BA6	7BK	
V22	Converter	90X6BE6	6BE6	7CH	
V23	IF Amplifier	90X6BA6	6BA6	7BK	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA:	RTMA BASE TYPE	NOTES
V24	90X21AP4	21AP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	450	45B173	AFH2-61		UPT62245		TVL-2770	▲ Filter
B	40	450		PRS50/100		BRH501		TVA-1310	■ Filter
C	75	50							▲ Vert. Output Cathode
C2A	40	250	45B174	AFH3-133		UP4445C		TVL-4739	■ Filter
B	40	250		PRS250/40		BR4025			▲ Filter
C	40	450							▲ Audio Output Dec.
D	20	25							▲ Audio Output Cathode
C3	8	475	45A103	PRS500/8		BR850A		TVA-1902	Vert. Output Dec.
C4A	10	450	45A172	PRS450/10-10		BRD1145A		TVA-2722	Decoupling
B	10	450							Decoupling
C5	5	50	45B175	PRS150/4		BR550		TVA-1303	Horiz. Output Cathode
C6	100	10	45B170	PRS12/100		BRH121A		TVA-1130	Video Output Cathode
C7	5	50	45B175	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C8	12								Fixed Trimmer
C9	270			SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C10	27				TCZ-27		NP0K-270		Fixed Trimmer
C11A	1500			BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	AGC Filter
B	1500			BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Amp. Fil. Bypass
C	1500			BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Bypass
C12	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	RF Amp. Screen Bypass
C13	18				TCZ-18		NP0K-180		Fixed Trimmer
C14	16								Fixed Trimmer
C15	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C16	2.2				TCZ-2.2		NP0K-2R2		Osc. Coupling
C17	39								Osc. Feedback
C18	20				TCN-20		N750K-200		Fixed Trimmer ¶
C19	3.3						N750K-3R3		Fixed Trimmer
C20A	1500			BPD-2X0015	DD-2-152	TM5DD15	812-0015	5HK-2D15	Conv. Fil. Bypass
B	1500								RF Bypass
C21	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	Mixer Plate Dec.
C23	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C24	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C25	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C26	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Dec.
C27	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Filter
C28	68				TCZ-68		NP0K-680		Fixed Trimmer
C29	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C30	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Cathode
C31	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Fil.
C32	10		47B20100K5	SI10	D6-100	5W5Q1	GP1K-100	5GA-Q1	Video Det. Filter
C33	5		47B20050K5	SI5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C34	.5	100	46A177	P288-5		PJ2P5		2TM-P5	AGC Filter
C35	.5	100	46A177	P288-5		PJ2P5		2TM-P5	Video Coupling
C36	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C37	.1	200	46AU104J	P288-1	DF-104	PJ2P1		2TM-P1	Video Coupling
C38	2.2		47A160-4		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C39	47			SI47N750	TCN-47		N750K-470	5TCU-Q47	Fixed Trimmer
C40A	4000		47A218	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	Sound IF Decoupling
B	4000				D6-402				Sound IF Cathode
C41	330		47B2033IK5	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C42	1000		47B20A102M5	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	De-Emphasis
C43	10000		46AY103J	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP	RATING VOLT	REPLACEMENT DATA Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C44	68		47B2GA68BK5	SI68	D6-680	5RS4T	GP1K-680	5GA-Q68	Tone Comp.
C45	.02	400	46AY203J	P488-02	DF-203	PTE4S2		4TM-S2	Tone Comp.
C46	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C47A	.01								Audio Coupling
B	250		†49A017				†PC-80	†102C1	AF Amp. Plate Bypass
C									Audio Output Grid
C48	.01	600	46AY103J		D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C49	220	500	47X20B221K	1468-00025	D6-221	5W 5T25	GP2K-221	1FM-325	Sync Coupling
C50	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Sync Coupling
C51	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Sync Coupling
C52	68	500	47B20680K5	SI68	D6-680	5RSQT	GP1K-680	5GA-Q68	Sync Amp. Cathode
C53	5	200	46AT504J	P288-5		PJ2P5		2TM-P5	Sync Clipper Cathode
C54A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		♦49A015	♦P688-005	♦PC-100	PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C55	6800	500	47X35B682K					MS-27	Vert. Osc. Grid Cap.
C56	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Vert. Hold Bypass
C57	1000		47B20A102M5	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Vert. Osc. Plate
C58	.05	600	46BR473L6	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C59	.05	200	46AL503J	P288-05	DF-503	PJ2S5		2TM-S5	RF Bypass
C60	.1	600	46AX104J	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C61	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Sweep Coupling
C62	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Integrator Net.
C63	120	500	47X20B121K	1469-00015		5RST15			Horiz. Sync Coupling
C64	82	500	47X20B820K						Horiz. Sync Coupling
C65	330	500	47X20B331K	1469-00035					Voltage Divider
C66	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. AFC Plate
C67	5	200	46AT504J	P288-5		PJ2P5		2TM-P5	Horiz. AFC Filter
C68	.02	400	46AY203J	P488-02	DF-203	PTE4S2		4TM-S2	Horiz. AFC Filter
C69	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. AFC Filter
C70	330	500	47X20B331K	1469-00035					Horiz. Osc. Grid Cap.
C71	.01	400	46BR103E4	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Fixed Trimmer
C72	82	500	47X20B820K						Horiz. Feedback
C73	820	500	47X25B821K						Horiz. Discharge
C74	6800	500			D6-682		GP2-333-682	MS-27	Horiz. Sweep Coupling ††
C75	.047	600	46AY503J	P688-047	DF-503	PTE6S47		6TM-S47	Horiz. Output Screen
C76	.05	600	46AY503J	P688-05		PTE6S5		6TM-S5	Damper Filter
C77	.05	600	46AY503J	P688-05		PTE6S5		6TM-S5	Damper Filter
C78	1000	1000							Fixed Trimmer ††
C79	.1	600	46AX104J	P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Sweep Coupling
C80	500	20000	47A223	HV20C	TV3-502	MM-C20T5			HV Filter
C81	10000		46BR103J6	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Line Filter
C82	10000		46BR103J6	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Line Filter
C83	.05	600	46AY503J	P688-05	DF-503	PTE6S5		6TM-S5	RF Bypass
C84	270		47B20271K5	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C85	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Amp. Screen Bypass
C86	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Amp. Cathoue Bypass
C87	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Rf Bypass
C88	270		47B20271K5	SI270	D6-271		GP2K-271	5GA-T27	RF Coupling
C89	47		47B20A470K5	SI470	D6-470		GP1K-470	5GA-Q47	Osc. Grid Cap.
C90	.02	600	46AY203J	P688-02	DF-203	PTE6S2		6TM-S2	Osc. Anode Bypass
C91	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Conv. Plate Dec.
C92	270		47B20271K5	SI270	D6-271		GP2K-271	5GA-T27	IF Coupling
C93	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	IF Amp. Plate Dec.
C94	5000		47A168	BPD-005	DD-502	TM5D5	811-005	5HK-D5	IF Amp. Screen Bypass
C95	10		47B20A100K5	SI10	D6-100	5W5QJ	GP1K-100	5GA-Q1	Fixed Trimmer
C96A	100		† 49A016	SI100	†PC-50	TM5T1	GP1K-101	†100C1	Diode RF Filter
B	100			SI100		TM5T1	GP1K-101		Diode RF Filter
C97	.05	200	46AU503J	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C98	.1	600	46AY104J	P688-1	DF-104	PTE6P1		6TM-P1	AVC Filter
C99	.005	600	46AZ502J	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.

† Some models use 13MMF in this application
†† Some models use 4700MMF in this application (Part #47X35B472K)
†‡ Some models use 1800MMF in this application (Part #47A275)
♦ Items C54A, C54B, C54C, R59A, R59B, R59C are combined in one unit.
† Items C47A, C47B, C47C, R47A, R47B are combined in one unit.
When replacing items separately C47B should total 250MMF
† Items C96A, C96B, R110 are combined in one unit.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafters PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	250KΩ		25B966	QJ-316*			Contrast control-Panel
B	1Meg						Volume Control & SW-Tapped② 100KΩ-Rear
R2A	25.6KΩ	2	25B967	QJ-317†			Focus Control-Wire Wound-Panel
B	1Meg						Brightness Control-Rear
R3A	1Meg		25B917	QJ-304**	RTV-40	SBB-688	Vert. Hold Control-Panel
B	50KΩ						Horiz. Hold Control-Rear
R4A	5000Ω		25B712	QU-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2.5Meg		25B711	QU-238	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	50KΩ		25A858	QU-123	AG-44-S	AN-31	Horiz. Drive Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B17-111 & P1-106 (Panel), B18-137X & R2-127 (Rear) & SWITCH 76-1
† CONCENTRIKIT EQUIVALENT -KIT K-3, BASE ELEMENTS & SHAFTS W11-111 & P3-106 (Panel), B11-137 &R2-131 (Rear
** CONCENTRIKIT EQUIVALENT -KIT K-2, BASE ELEMENTS & SHAFTS B11-137 &P1-106 (Panel), B11-123 & R2-127 (Rear)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafter PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ±10% UNLESS OTHERWISE NOTED
R7	3900Ω			BTS-3900	RF Amp. Grid
R8	6800Ω				RF Amp. Screen
R9	1000Ω	20%		BTS-1000	RF Amp. Plate Decoupling
R10	1000Ω			BTS-1000	RF Amp. Plate Decoupling
R11	47000Ω			BTS-4700	Mixer Grid
R12	150KΩ				Mixer Grid
R13	22Ω				Parasitic Suppressor

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA Hallicrafters PART No.	IRC PART No.	IDENTIFICATION CODES
R14	10KΩ				Mixer Plate
R15	10KΩ				Osc. Grid
R16	4700Ω			BTS-4700	Osc. Plate
R17	1000Ω	20%		BTS-1000	Decoupling
R18	4700Ω		23X20X472K	BTS-4700	1st. Video IF Coil Shunt
R19	47Ω		23X20X470K		1st. Video IF Amp. Cathode
R20	100Ω		23X20X101K	BTS-100	Decoupling
R21	270Ω		23X20X271K	BTS-270	AGC Network - See Note 1
R22	12KΩ		23X20X123K	BTS-12K	2nd. Video IF Coil Shunt
R23	47Ω		23X20X470K		2nd. Video IF Amp. Cathode
R24	100Ω		23X20X101K	BTS-100	Decoupling
R25	270Ω		23X20X271K	BTS-270	AGC Network - See Note 1
R26	100Ω		23X20X101K	BTS-100	Decoupling
R27	10KΩ		23X20X103K		3rd. Video IF Coil Shunt
R28	150Ω	20%	23X20X151K	BTS-150	3rd. Video IF Amp. Cathode
R29	100Ω		23X20X101K	BTS-100	Decoupling
R30	820KΩ		23X20X824M	BTS-820K	AGC Network - See Note 2
R31	3300Ω		23X20X332K	BTS-3300	Video Det. Diode Load
R32	220KΩ	20%	23X20X224M	BTS-220K	Video Output Grid
R33	150Ω		23X20X151K	BTS-150	Video Output Cathode
R34	5600Ω	2	23X40X562K	BTB-5600	Video Output Plate
R35	1500Ω	1	23X30X152K	BTA-1500	Decoupling
R36	10KΩ		23X20X103K	BTS-10K	Isolation
R37	10KΩ	1	23X30X103K	BTA-10K	Picture Tube Grid
R38	100KΩ	20%	23X20X104M	BTS-100K	Picture Tube Cathode
R39	150Ω		23X20X151K	BTS-150	Sound IF Amp. Cathode
R40	22KΩ		23X20X223K	BTS-22K	Sound IF Amp. Decoupling
R41	270Ω		23X20X271K	BTS-270	Balancing
R42	33KΩ		23X20X333K	BTS-33K	De-emphasis
R43	10KΩ		23X20X103J	BTS-10k	Ratio Det. Diode Load
R44	10KΩ		23X20X103J	BTS-10K	Ratio Det. Diode Load
R45	15KΩ		23X20X153K	BTS-15K	Tone Compensation
R46	10Meg	20%	23X20X106M	BTS-10Meg	AF Amp. Grid
R47A	500KΩ		†49A017		AF Amp. Plate
B	500KΩ				Output Grid
R48	270Ω		23X30X271K	BTA-270	Output Cathode
R49	15KΩ	10	24A922	1 3/4A-15K	Bleeder - Wire Wound
R50	220KΩ	20%	23X20X224M	BTS-220K	Isolation
R51	2.2Meg	20%	23X20X225M	BTS-2.2Meg	Sync Separator Grid
R52	47KΩ		23X20X473K	BTS-47K	Sync Separator Plate
R53	270KΩ	20%	23X20X274M	BTS-270K	Sync Amp. Cathode
R54	820KΩ	20%	23X20X824M	BTS-820K	Sync Amp. Plate
R55	47KΩ	20%	23X20X473M	BTS-47K	Sync Clipper Grid
R56	4700Ω		23X20X472K	BTS-4700	Sync Clipper Cathode
R57	2200Ω		23X20X222K	BTS-2200	Sync Clipper Plate
R58	2200Ω		23X20X222K	BTS-2200	Integrator Network
R55A	22KΩ			BTS-22K	Integrator Network
B	8200Ω		♦49A015	BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Vert. Osc. Grid
R60	820KΩ	20%	23X20X824M	BTS-820K	Vert. Osc. Plate
R61	1Meg	20%	23X30BF105M	BTA-1Meg	Vert. Peaking
R62	8200Ω		23X20X822K	BTS-8200	Vert. Output Grid
R63	1Meg		23X20X105K	BTS-1Meg	Vert. Output Cathode
R64	1000Ω	1	23X30X102K	BTA-1000	Vert. Output Transformer Shunt - See Note 3
R65	100KΩ		23X20X104K	BTS-100K	Vert. Output Transformer Shunt - See Note 3
R66	82KΩ		23X20X823K	BTS-82K	Vert. Blanking Network
R67	4700Ω		23X20X472K	BTS-4700	Vert. Blanking Network See Note 3
R68	680Ω		23X20X681K	BTS-680	Voltage Divider
R69	120KΩ	1	23X30BF124K	BTA-120K	Horiz. AFC Grid
R70	330KΩ	1	23X20X334K	BTS-330K	Horiz. AFC Grid
R71	820KΩ	1	23X20X824K	BTS-820K	Horiz. AFC Cathode
R72	82KΩ	1	23X30X823K	BTA-82K	Horiz. AFC Cathode
R73	330KΩ	1	23X30BF334J	BTA-330K	Horiz. AFC Filter
R74	3900Ω		23X20X392K	BTS-3900	Voltage Divider
R75	68KΩ		23X20X683K	BTS-68K	Horiz. Osc. Grid
R76	150KΩ		23X20X154K	BTS-150K	Horiz. Osc. Transformer Shunt
R77	8200Ω		23X20X822K	BTS-8200	Horiz. Osc. Plate
R78	47KΩ	1	23X30BF473K	BTA-47K	Horiz. AFC Feedback
R79	330KΩ		23X20X334K	BTS-330K	Voltage Divider
R80	10KΩ	1	23X30X103K	BTA-10K	Parasitic Suppressor
R81	47Ω		23X20X470K		Horiz. Output Grid
R82	470KΩ		23X20X474K	BTS-470K	Horiz. Output Cathode - Wire Wound
R83	220Ω	3	24A925		Horiz. Output Screen
R84	15KΩ	2	23X10X153K	BTB-15K	Damper Plate - Wire Wound
R85	200Ω	5	24A926	1 3/4A-200	Decoupling
R86	2200Ω	1	23X30X222K	BTA-2200	H.V. Rectifier Filament
R87	3.3Ω		23X20X033K		H. V. Filter
R88	1Meg	1	23X30X105M		Current Limiting - Wire Wound - See Note 4
R89	20Ω	7.5	24A927		Filter - Wire Wound
R90	750Ω	10	24A920	1 3/4A-750	Fuse Shunt
R91	150KΩ	20%	23X20X154M	BTS-150K	Isolation
R92	270KΩ	20%	23X20X274M	BTS-270K	Decoupling - Wire Wound
R93	1000Ω	5	24A921	1 3/4A-1000	Focus Control Shunt - Wire Wound
R94	1000Ω	5	24A921	1 3/4A-1000	Voltage Divider
R95	1Meg		23X20X105K	BTS-1Meg	Voltage Divider
R96	150KΩ		23X20X154K	BTS-150K	Converter Grid
R97	2.2Meg		23X20X225K	BTS-2.2Meg	RF Amp. Grid
R98	1000Ω		23X20X102K	BTS-1000	RF Amp. n. Cathode
R99	56KΩ		23X20X563K	BTS-56K	RF Amp. Screen
R100	8200Ω	20%	23X20X822M	BTS-8200	RF Amp. Plate
R101	1000Ω		23X20X102K	BTS-1000	RF Amp. Decoupling
R102	1Meg	20%	23X20X105M	BTS-1Meg	Converter Grid
R103	22KΩ	20%	23X20X223M	BTS-22K	Osc. Grid
R104	27KΩ	1	23X30X273K	BTA-27K	Osc. Anode
R105	2.2Meg		23X20X225K	BTS-2.2 Meg	IF Amp. Grid
R106	2200Ω	20%	23X20X222M	BTS-2200	IF Amp. Cathode
R107	56KΩ		23X20X563K	BTS-56K	IF Amp. Screen
R108	1000Ω		23X20X102K	BTS-1000	IF Amp. Decoupling
R109	1Meg	20%	23X20X105M	BTS-1Meg	AVC Network
R110	47KΩ		† 49A016	BTS-47K	Diode Filter
R111	470KΩ	20%	23X20X474M	BTS-470K	Diode Load

Note 1. Some Models use a 1500 Resistor in this application
Note 2. Some Models use a 1Meg Resistor in this application
Note 3. When R65, R66 are used, R68 is deleted.
Note 4. Used only with English make (Varley) Power Transformer
† Items R47A, R47B, C47A, C47B, C47C are combined in one unit
♦ Items R59A, R59B, R59C, C54A, C54B, C54C are combined in one unit
† Items R110, C96A, C96B are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ②1.74A	640VCT .180ADC Tapped② 420VCT .060ADC	5VAC ②3A	6.3VAC ②9A SEC.4 6.3VAC ②1.2A	52C204C 52C204 ①			P-3073

① Alternate Power Transformer

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Hallicrafters PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	180Ω	850Ω	55B115 55C115 ①	A-8111	A-3000	TB0-1 ②	Vert. Oscillator Trans.
T3	510Ω Tapped ②5Ω 9Ω 12Ω 37Ω 39Ω 57Ω	0Ω	55C180				Hor. Output Trans.
T4	150Ω Tapped ②4Ω		55-151 55B151 ①	A-8141	A-3039		Vert. Output Trans.
T5A	2Ω		53C237	DY-9	MDF-70		Hor. Deflection Coils
B	47Ω		53C197 ①				Vert. Deflection Coils
T6	100Ω		51A1287				Focus Coil

① Alternate Unit
② Mount on top of chassis.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Hallicrafter PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	4.7KΩ	4Ω	280Ω	.5Ω	55B150	A-3877 ③	A-3019 ③	R0-302 ④	① Drill New Mounting Holes ④ Cut Tabs to Duplicate Original Mounting

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA Hallicrafter PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	P.M.	4Ω		ST-115 Mod. P8-V	8A21	
	CONE DIA.	V. C. DIA.				
SP1B	8"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ↓)	REPLACEMENT DATA Hallicrafter PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.160A	70Ω	1.5 Henries	56B117 56C116 ②	C-2327 ①	C-2994 ①	TR-3300 ①	① Drill one new mounting hole.

② Alternate Filter Choke

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Hallicrafter PART No.	MERIT PART No.	NOTES
L2	Ant. Trans.	.1Ω	.1Ω			
L3	Ant. Coupling	.6Ω				
L4	Ant. Coils	0Ω				
L5	Ant. Coil	0Ω				
L6	RF Choke	0Ω				
L7	RF Coil	0Ω				
L8	RF Coils	0Ω				
L9	Mixer Grid	0Ω				
L10	Osc. Coils	0Ω				
L11	Osc. Coil	0Ω				
L12	Fil. Choke	0Ω				
L13	1st. Video IF	.1Ω	.1Ω	51B1334		
L14	2nd. Video IF	.2Ω	.2Ω	50A475		
L15	Fil. Choke	0Ω		53A200		
L16	3rd. Video IF	.1Ω	.1Ω	51B1332 or 50A476		Includes Trap
L17	4th. Video IF	.3Ω	.3Ω	50A477		
L18	RF Choke	2Ω		53B098		
L19	Peaking Coil	7.8Ω		51A1256	† TV-181	Wound on 6.8KΩ Resistor
L20	Peaking Coil	1Ω		51A1260	* TV-185	Wound on 2.2KΩ Resistor
L21	Peaking Coil	1Ω		51A1257	♦ TV-185	Wound on 15KΩ Resistor
L22	4.5MC Trap	.9Ω		51B1333 or 50B474	TV-151	
L23	Peaking Coil	18Ω		51A1259	* TV-188	Wound on 2.2K Resistor
L24	Sound IF	.9Ω		51B1333	TV-151	Alternate Part No. 50B474
L25	Ratio Det.	3.8Ω	.6Ω	50C473	TV-1U0	Tertiary Winding .4Ω
L26	Horiz. Osc.	75Ω	45Ω	51B1242	TV-162	Tap② 20
L27	Width Coil	1Ω		51-1489 or 51B1330		

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PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Hallicrafter PART No.	MERIT PART No.	
L28	Horiz. Lin.	7.6Ω		51A1470		
L29	Loop Ant.	1.4Ω		57-146		
L30	455KC Trap	55Ω		53-198		
L31	Osc. Coil	6.3Ω		51-1245		Tap ⓐ .6Ω
L32	Input IF	16Ω	16Ω	50-472		
L33	Output IF	16Ω	16Ω	50-472		

* Parallel with 2.2K Resistor
♦ Parallel with 15K Resistor
† Parallel with 6.8K Resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Hallicrafters PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Slo-Blo Pigtail	1/4 A. 125 V.	39A344		315.250		MDV 1/4	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	Hallicrafters PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M2		GC-AG-J	G-AG	WC36B	A56U	43	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	Hallicrafters PART No.	WALCO PART No.	JENSEN PART No.	
M3		W-3AGA or W-3AGS	A-842 or A-742	

MISCELLANEOUS

ITEM No.	PART NAME	Hallicrafters PART No.	NOTES
M4	RF Tuner	1D961	Complete
	RF Tuner	1A1077	Complete (Alternate)
	RF Tuner	1A1088	Complete (Alternate)
M5	Crystal	19-1246	IN60 (AM Det.)
M6	Switch	60C479	TV-AM-Phono
M7	Switch	60A249	Hi-Lo Line
M8	Ion Trap	21A101	
M9	Tuning Cap	48-241	(25-477MMF-31-187MMF)
B2	Trimmer	44A391	7-100MMF (Horiz. Lock)
A35	Trimmer	44-392	4-20MMF (455KC Trap Adj.)

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Adjust the horizontal drive control clockwise until a vertical white line appears in the pattern. Turn in opposite direction a little further than the point at which the white line disappears.

Turn the horizontal hold control fully clockwise. Adjust the horizontal frequency slug, (B1) until a vertical bar appears in the pattern.

Turn the horizontal hold control fully counter clockwise.

Momentarily interrupt the signal by turning to another channel and back again. Three or four diagonal bars should appear on the screen. If more than that number appear, turn the horizontal lock trimmer, (B2) in a clockwise direction. If less appear, turn B2 counter clockwise for the proper number.

Readjust the horizontal drive as before.

If the horizontal synchronization is still unsatisfactory after the above adjustments, it may be necessary to adjust the horizontal waveform slug, (B3).

Connect the vertical amplifier of an oscilloscope through 47KΩ to terminal C of L26. View the waveform on the scope and, if necessary, adjust B3 so that the broad and narrow peaks are of equal height as in figure 11. While adjusting B3 keep the picture in sync by adjustment of B1.

Set the width slug, (B4) for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug, (B5) for a pattern that is symmetrical from left to right.

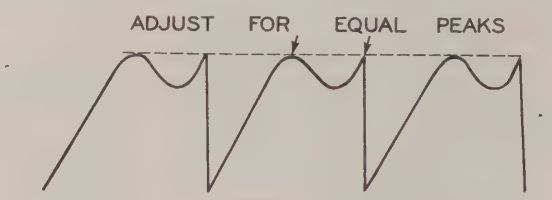
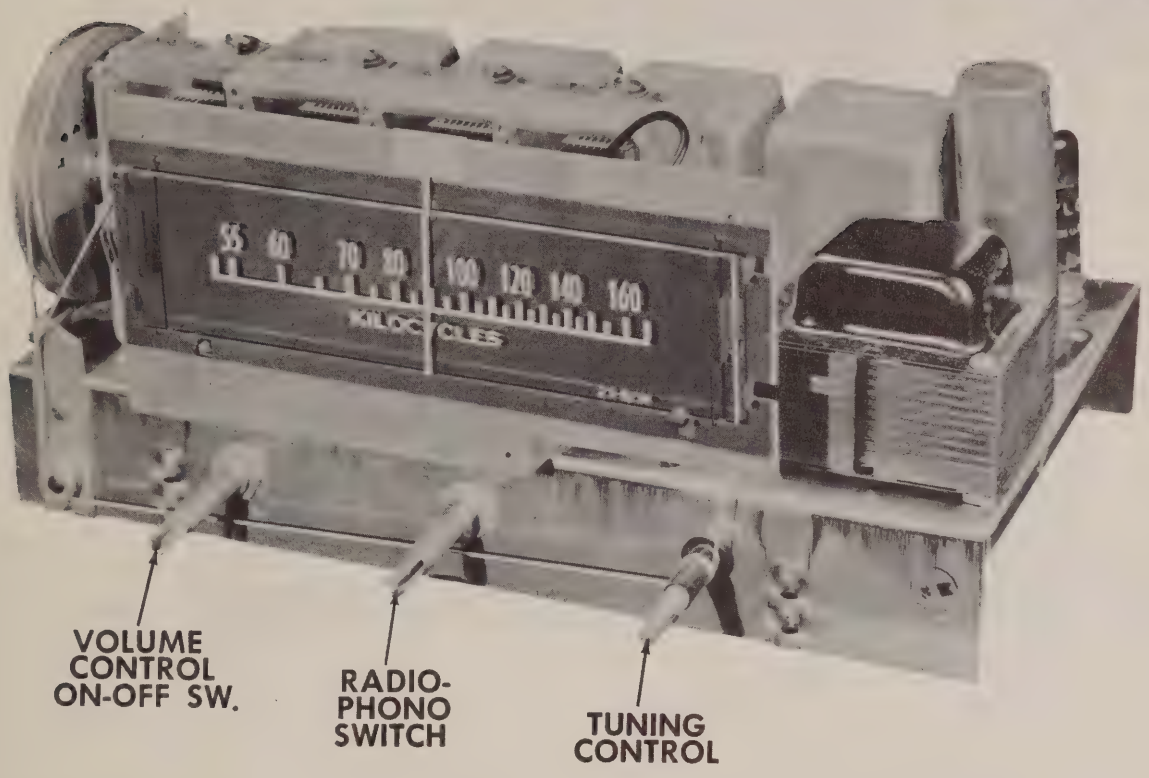


FIG. 11

DENVER, COLORADO

DENVER, COLORADO



MEISSNER
MODEL 4E

TRADE NAME	Meissner Model 4E
MANUFACTURER	Meissner Mfg. Div., Maguire Ind, Inc., Mt. Carmel, Ill.
TYPE SET	AC Operated TRF Tuner With Self Contained Power Supply
TUBES (Four)	Types 6BA6 1st. RF Amp., 6BA6 2nd. RF Amp., 6AT6 Det.-AVC-AF Amp., 6X4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .275 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	550-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	220MMF	High side to antenna terminal. Low side to chassis.	1385 KC (400~ Mod.)	1400 KC	High side to point (A). Low side to chassis.	A1, A2 A3, A4	Loosen A1 thru A4, then slowly tighten one at a time for an output slightly less than maximum. Carefully tighten each trimmer to maximum output. Check alignment by slowly tuning generator from 1385 KC to 1415 KC. Output should drop slightly at 1400 KC, then rise again to a slight peak at 1415 KC, indicating that the tuner is correctly calibrated at 1400 KC.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MEISSNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	1st. RF Amplifier	6BA6	6BA6	7BK	
V2	2nd. RF Amplifier	6BA6	6BA6	7BK	
V3	Det. AVC-AF Amp.	6AT6	6AT6	7BT	
V4	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT		REPLACEMENT DATA: MEISSNER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	250					UP22125		TVL-2515	■ Filter
B	20	250							TVA-1508	▲ Filter
C	20	250								Filter
C2	.05	400			P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C3	25				S125	D6-250	5W5Q25	GP1K-250	5GA-Q25	Fixed Trimmer
C4	.05	400			P488-05	DF-503	PTE4S5		4TM-S5	RF Amp. Screen Bypass
C5	10000		†		BPD-01	DD-103	TM5S1	821-01	5HK-S1	1st. RF Amp. Cathode
C6	.1	400			P488-1	DF-104	PTE4P1		4TM-P1	AVC Filter *
C7	10000		¶		BPD-01	DD-103	TM5S1	821-01	5HK-S1	2nd. RF Amp. Cathode
C8	8	500			1469-00001		5R5Q1		MS-41	RF Coupling
C9A	150		♦		S1150	♦PC-51	TM5T15	GP2K-151	5GA-T15	Diode RF Filter
B	150				S1150		TM5T15	GP2K-151	5GA-T15	Diode RF Filter
C10	10000				BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling
C11	5000		‡		BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C12	.047	600			P688-047	DF-503	PTE6S47		6TM-D47	Audio Coupling
C13	.047	600			689ZGXY-05		PJ6S5		6TM-D47	Line Filter

† Items C5 and R3 are combined in one unit.
¶ Items C7 and R4 are combined in one unit.
♦ Items C9A, C9B, R9 are combined in one unit.
‡ Items C11 and R13 are combined in one unit.
* Some models use.05MFD in this application

CONTROLS

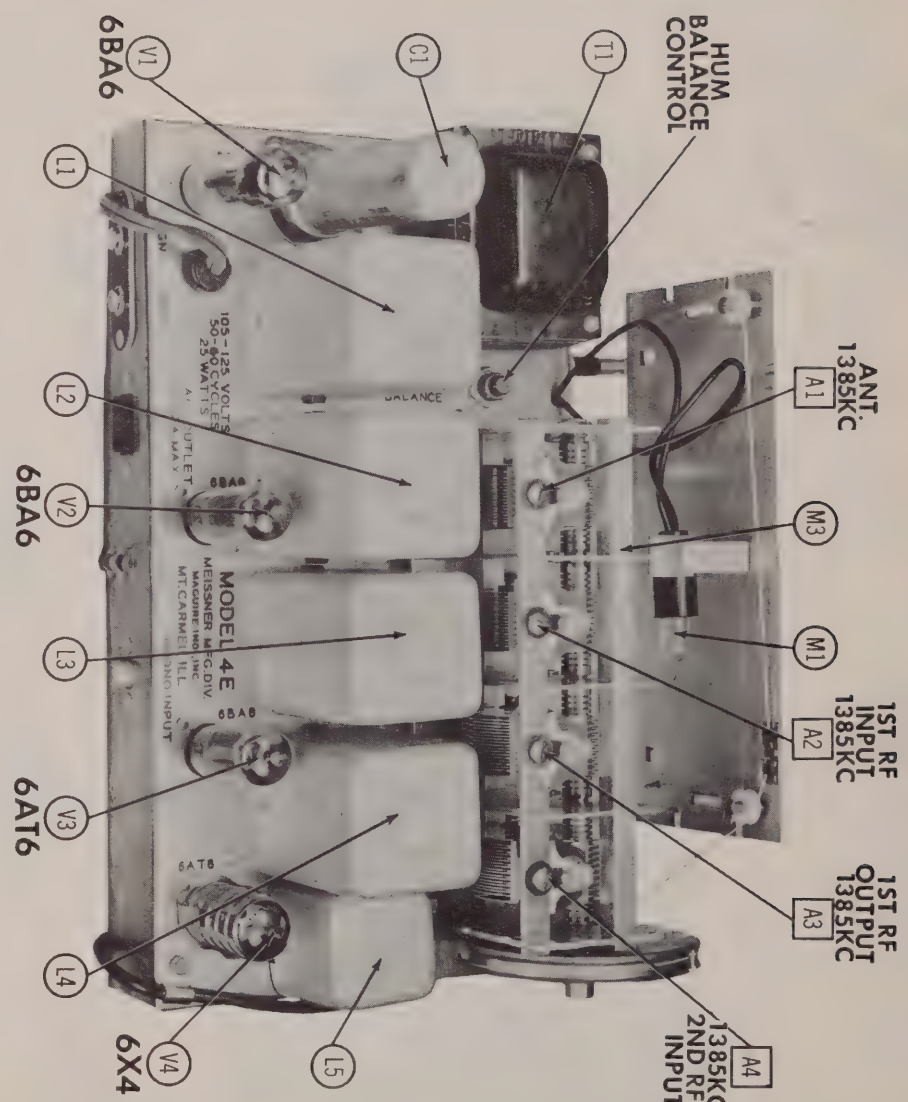
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MEISSNER PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	29424	Q13-133	AG-60-Z	BSK-60-S	Volume
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A
R2	100Ω	4	29260		RTV-80	SVP-983	Hum Balance-Wire Wound

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MEISSNER PART No.	IRC PART No.	IDENTIFICATION CODES
R3	470Ω	½	†	BTS-470	1st. RF Amp. Cathode
R4	470Ω	½	¶	BTS-470	2nd. RF Amp. Cathode
R5	2Meg	½			AVC Network
R6	15KΩ	1		BTA-15K	Screen Dropping
R7	47KΩ	½		BTS-47K	2nd. RF Transformer Shunt
R8	47KΩ	½		BTS-47K	2nd. RF Transformer Shunt
R9	47KΩ	½	♦	BTS-47K	Diode Filter
R10	100KΩ	½		BTS-100K	Diode Load
R11	470KΩ	½		BTS-470K	AVC Diode Load
R12	470KΩ	½		BTS-470K	AVC Diode Load
R13	10Meg	½	‡	BTS-10Meg	AF Amp. Grid
R14	100KΩ	1		BTA-100K	AF Amp. Plate
R15	2000Ω	5		1 3/4A-2000	Filter-Wire Wound
R16	10KΩ	½		BTS-10K	Filter-Wire

† Items R3, C5 are combined in one unit
¶ Items R4, C7 are combined in one unit.
♦ Items R9, C9A, C9B are combined in one unit
‡ Items R13, C11 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MEISSNER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC @ .275A	380VCT .020VAC	6.3VAC @ 1.9A		T-51517	PM-8418 ① ②	P-3047 ① ②	

① Drill new mtg. holes
② Add series resistor to reduce plate voltage

COILS (RF-IF)

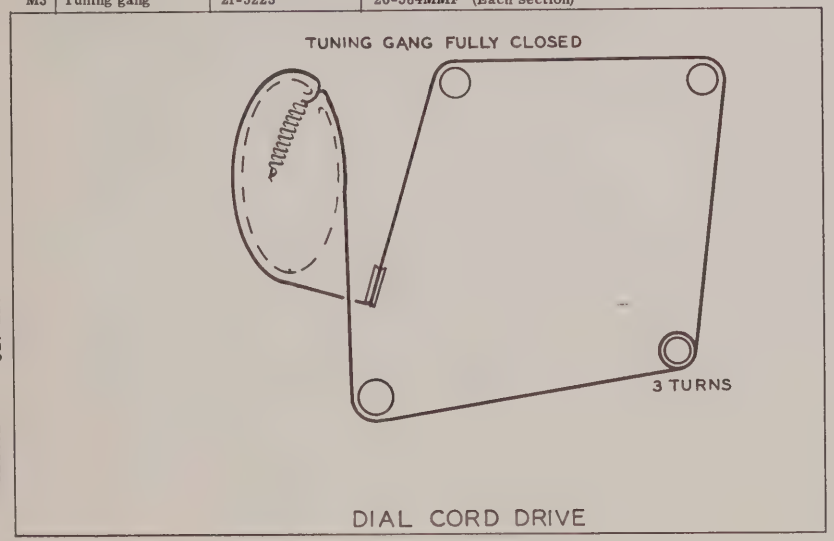
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MEISSNER PART No.	MERIT PART No.	
L1	Ant. Coil	26Ω	6.2Ω	9820		
L2	1st. RF Input	.1Ω	6Ω	9822		
L3	1st. RF Output	65Ω	6Ω	9824		
L4	2nd. RF Input	.1Ω	6.2Ω	9826		
L5	2nd. RF Output	23Ω	23Ω	9828		

DIAL LIGHTS

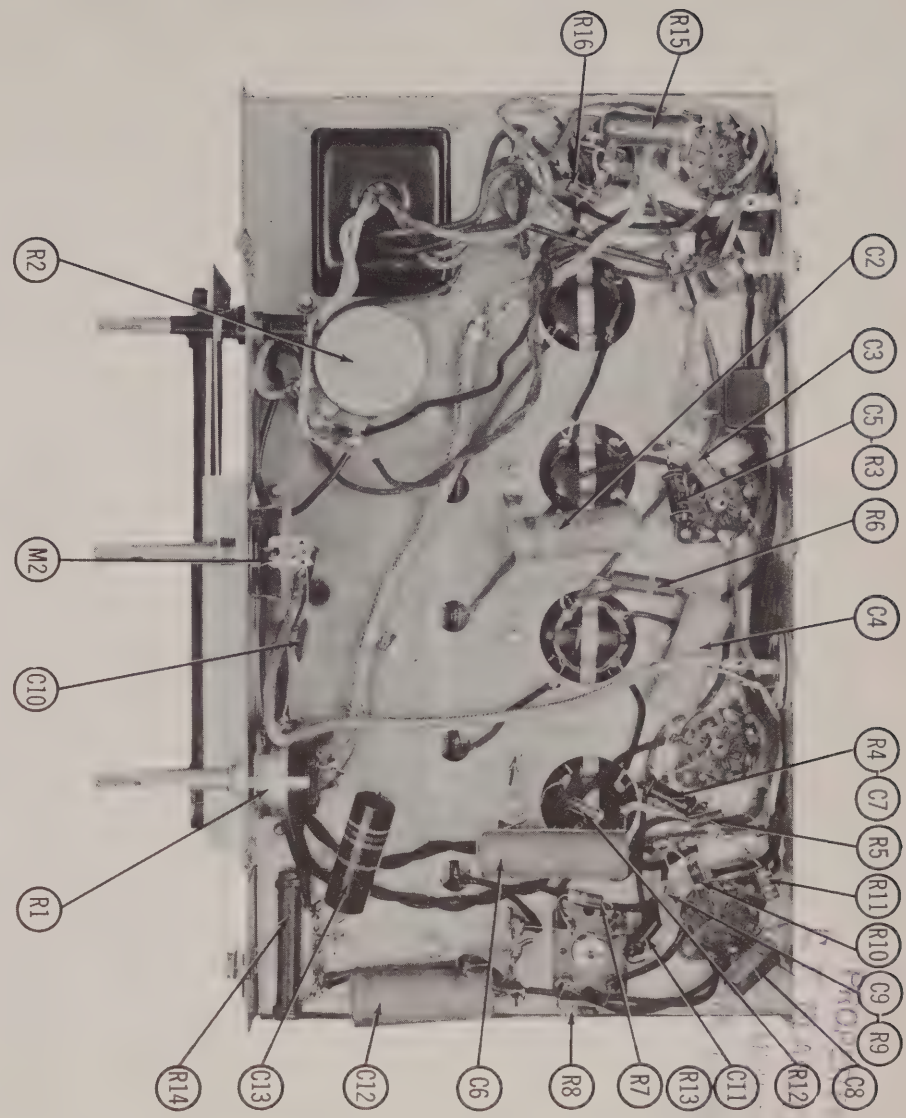
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MEISSNER PART No.		
M1	Bayonet	6-8	25	Blue			Type #47

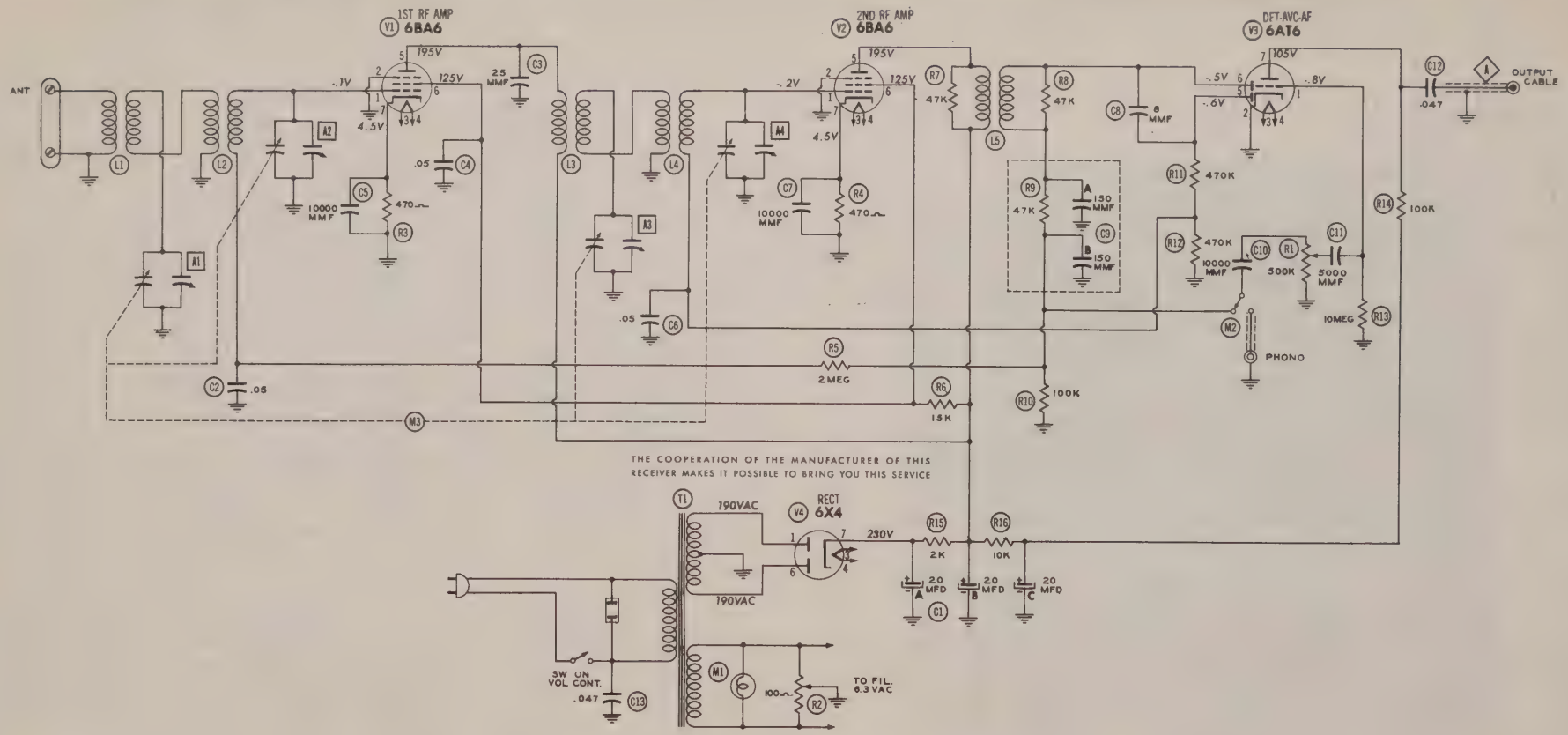
MISCELLANEOUS

ITEM No.	PART NAME	MEISSNER PART No.	NOTES
M3	Tuning gang	21-5223	26-384MMF (Each section)



CHASSIS—BOTTOM VIEW





RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.1Meg	0Ω	26Ω	26Ω	†2KΩ	†17KΩ	470Ω
V 2	6BA6	470KΩ	0Ω	26Ω	26Ω	†2KΩ	†17KΩ	470Ω
V 3	6AT6	10Meg	0Ω	26Ω	26Ω	940KΩ	195KΩ	†112KΩ
V 4	6X4	240Ω	INF	26Ω	26Ω	INF	230Ω	60KΩ

ALL MEASUREMENTS TAKEN IN "RADIO" POSITION
† MEASURED FROM PIN 7 OF V4

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172-5

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

MERCURY MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320

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MODEL 4120

MERCURY MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320

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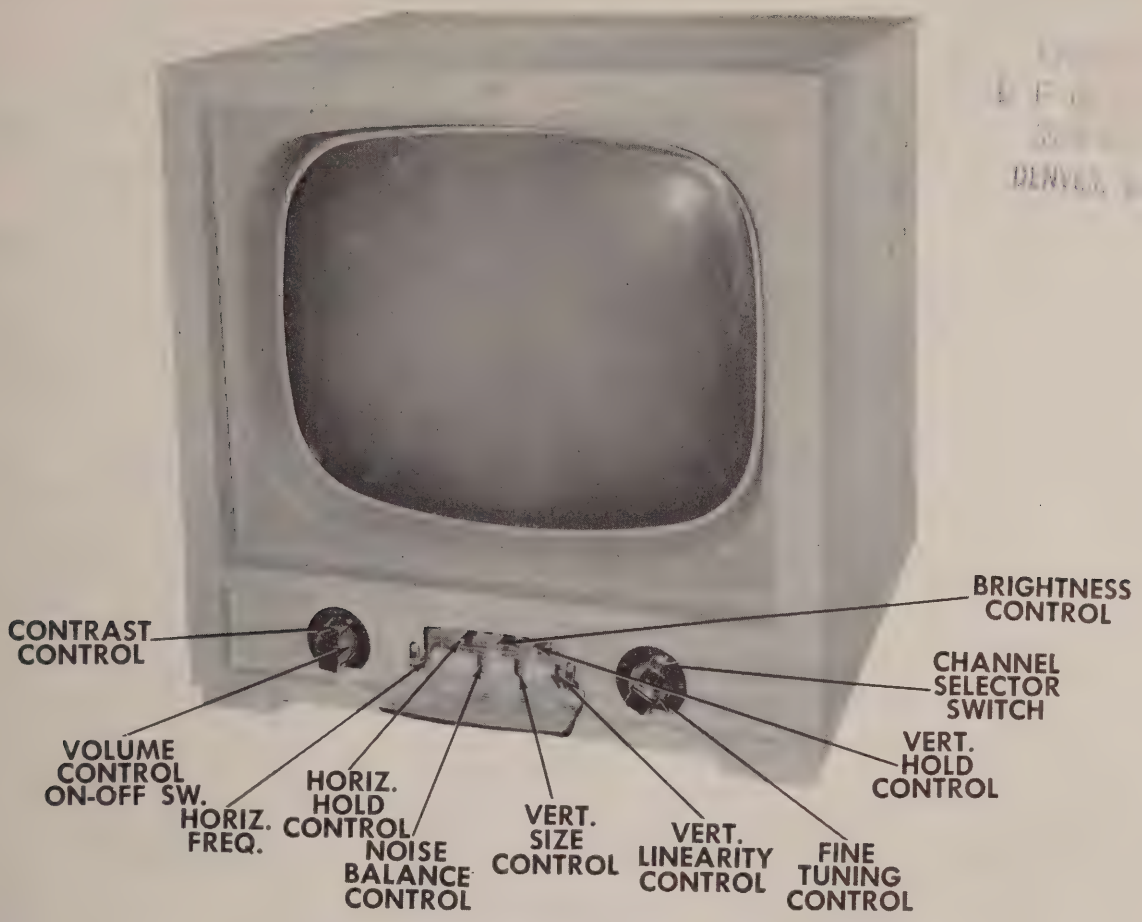
DATE 7-52 SET 172 FOLDER 6

MERCURY MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320



Mercury 4120

TRADE NAME	Mercury	Models	Chassis
		2013	150-2
		2113, 2115	150 - 11 or 81
		2401	150 - 5 or 51
		4120, 4220	150 - 2
		4317	150 - 7
		4220	150 - 2
MANUFACTURER	Pacific Mercury Television Mfg., Corp., 5955 Van Nuys Blvd., Van Nuys, Calif.		
TYPE SET	Television Receiver		
TUBES	Twenty One		
POWER SUPPLY	110 - 120 Volts AC - 60 Cycle		RATING 1.9 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13		

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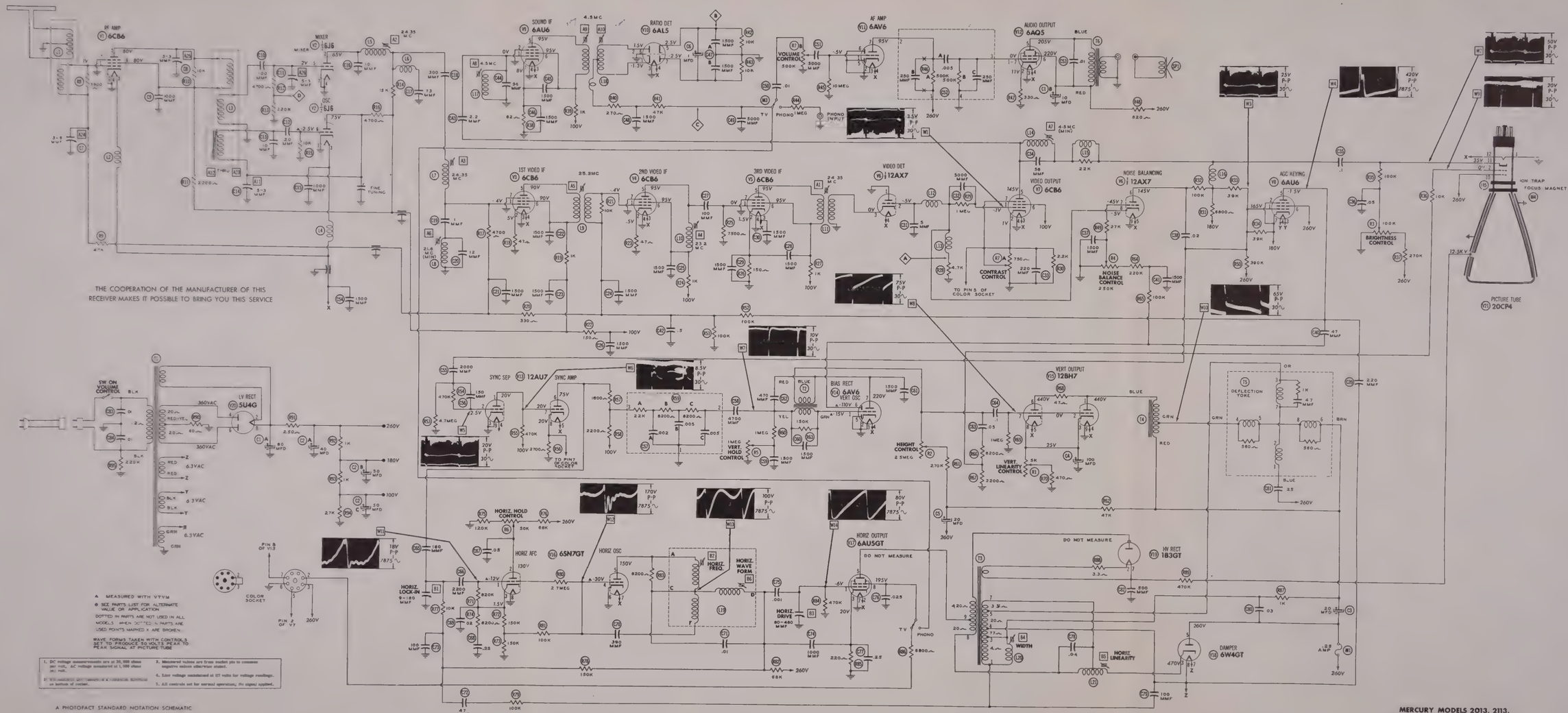
DATE 7-52 SET 172 FOLDER 6

MERCURY MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320


RF AMP V1 6CB6
MIXER V2 6J6
OSC V2 6J6
SOUND IF V5 6AU6
RATIO DET V10 6AL5
AF AMP V11 6AV6
AUDIO OUTPUT V12 6AQ5
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO DET V6 12AX7
VIDEO OUTPUT V7 6CB6
NOISE BALANCING V6 12AX7
AGC KEYING V8 6AU6
SYNC SEP V13 12AU7
SYNC AMP
VERT OSC V14 6AV6
VERT OUTPUT V15 12BH7
BIAS RECT V14 6AV6
LV RECT V20 5U4G
HORIZ AFC V16 6SN7GT
HORIZ OSC
HORIZ OUTPUT V17 6AU5GT
HV RECT V19 1B3GT
DAMPER V18 6W4GT
PICTURE TUBE V21 20CP4
VOLUME CONTROL
CONTRAST CONTROL
NOISE BALANCE CONTROL
BRIGHTNESS CONTROL
HEIGHT CONTROL
VERT LINEARITY CONTROL
VERT HOLD CONTROL
HORIZ HOLD CONTROL
HORIZ LOCK-IN
HORIZ DRIVE
HORIZ FREQ.
HORIZ WAVE FORM
WIDTH
HORIZ LINEARITY
ION TRAP
FOCUS MAGNET
SW ON VOLUME CONTROL
DEFLECTION YOKE
COLOR SOCKET
PHONO INPUT
FINE TUNING
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DO NOT MEASURE
A MEASURED WITH VTVM
B SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN SHOWN. IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 80 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Resistance values are in ohms unless otherwise noted.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
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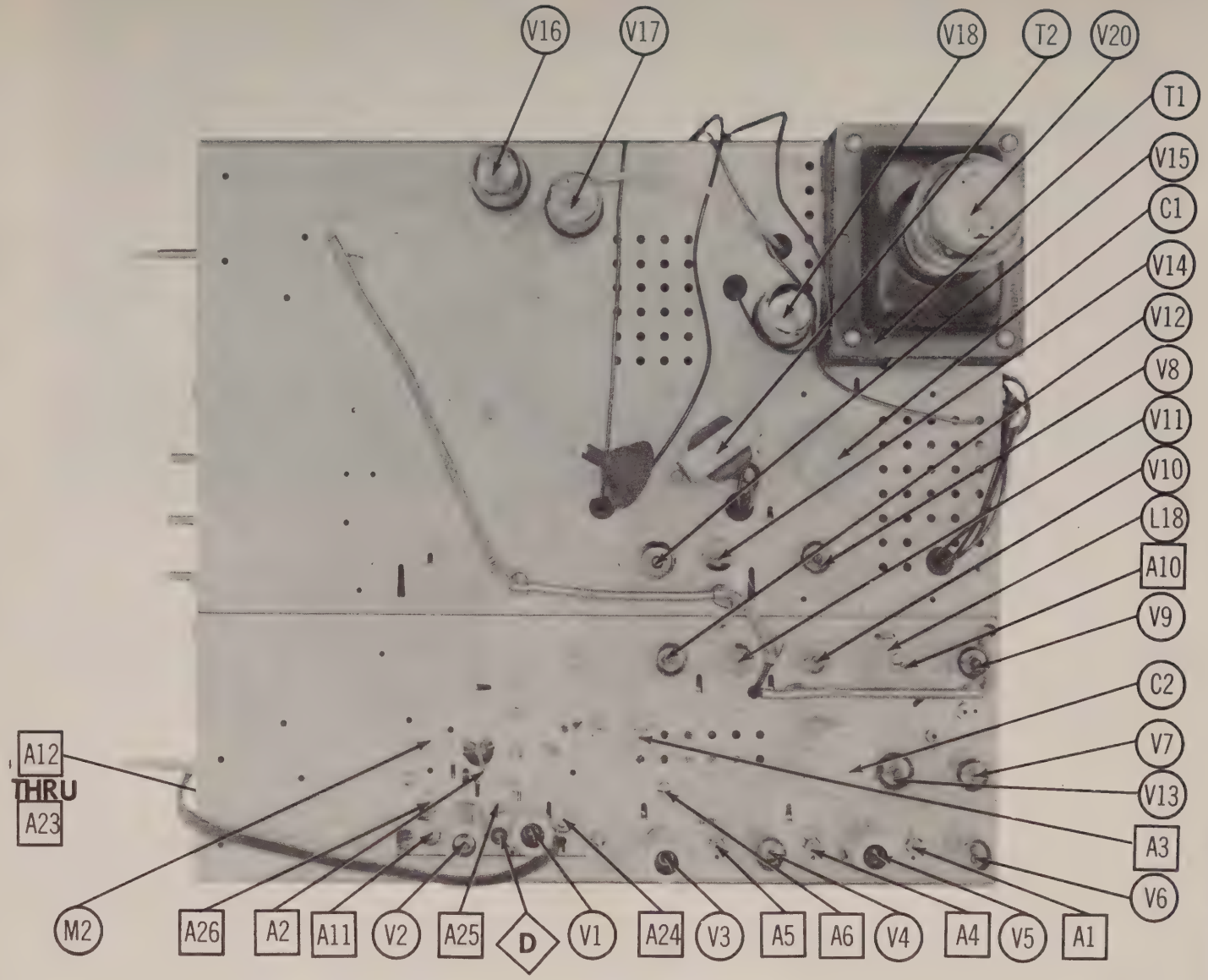
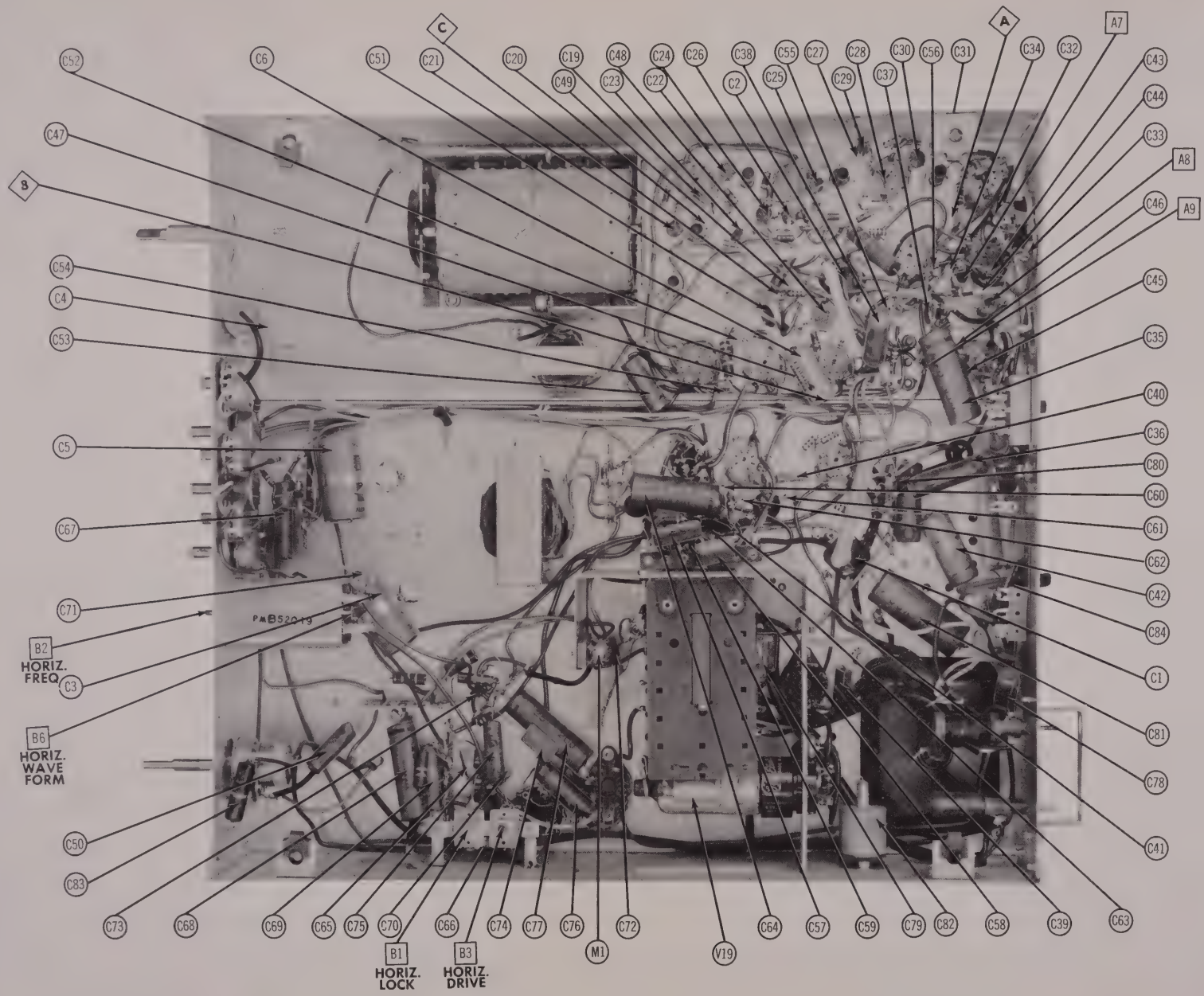
MERCURY
MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320

MERCURY MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320



CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal oscillator tube (V16) from its socket.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C24. Connect the positive lead to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24.35MC (unmod)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection. Attenuate signal generator to maintain 1 to 1.5 volt reading at Point (A).
2.	"	"	"	"	"	A2	Connect a 1KΩ Resistor across the grid resistor, R17, of V3. Adjust A2 for maximum deflection. Remove the 1KΩ Resistor.
3.	"	"	"	"	"	A3	Adjust for maximum deflection. (Note : on sets below serial number 10525 this inductance is fixed and step 3 should be disregarded).
4.	"	"	23.2MC	"	"	A4	Adjust for maximum deflection.
5.	"	"	25.2MC	"	"	A5	"
6.	"	"	21.6MC	"	"	A6	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC swp)	21.6MC 26.1MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1 with 21.6MC in trap notch and 26.1MC at 50% response. If necessary readjust A1 thru A5 for proper response.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe thru detector (fig. 2) to pin 11 of picture tube. Common to chassis.	A7	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A8, A9	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point (C). Common to chassis.	A10	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (450KC swp)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A8, A9	Disconnect stabilizor capacitor C6. Adjust for maximum amplitude and symmetry as per fig. 3.
10	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A10	Reconnect capacitor C6. Adjust A10 so that 4.5MC occurs at center of crossover lines as per fig. 4. SLIGHTLY retouch A9 for maximum amplitude and straightness of crossover lines.

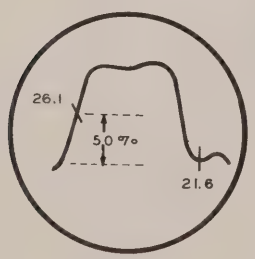


FIG.1

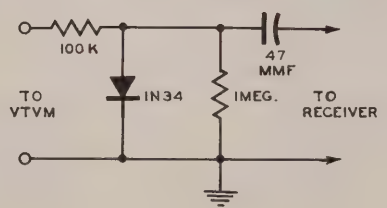


FIG.2

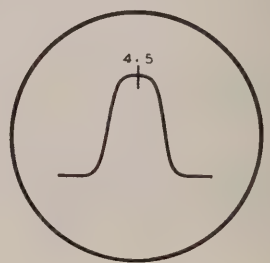


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using All. It should be noted that this is an all channel oscillator adjustment and should not be used to correct any individual channel. If adjustment of All will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is available through this hole as the channel switch is turned to each channel.
Remove the dummy converter tube and replace the original 6J6 in its socket.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point A. Low side to chassis.	A12	Adjust to place sound marker as shown in Fig. 5. The video marker should be at 50%.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A13	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A14	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A15	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A16	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A17	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A18	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A19	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A20	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A21	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A22	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A23	

RF AND MIXER ALIGNMENT

The tuner supplied with this receiver was carefully aligned at the factory and should not require complete realignment under normal conditions.
Reduce the battery bias to 1.5 volts.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. thru 10KΩ to Point D. Low side to chassis.	A24, A25 A26	Adjust for response curve similar to fig. 6 with markers above 90%.
13	"	"	207MC (10MC swp.)	205.25MC 209.75MC	12	"		Check for response curve similar to fig. 6. If markers fall below 70% on any channel make slight adjustments of A24, A25 and A26 with channel selector set for that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.26MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

FIG. 4

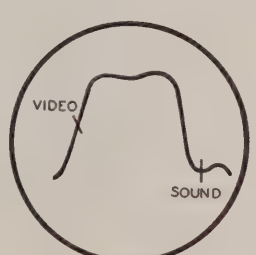


FIG. 5

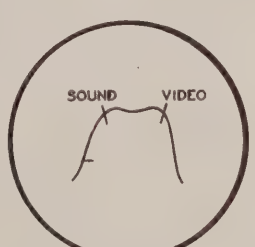
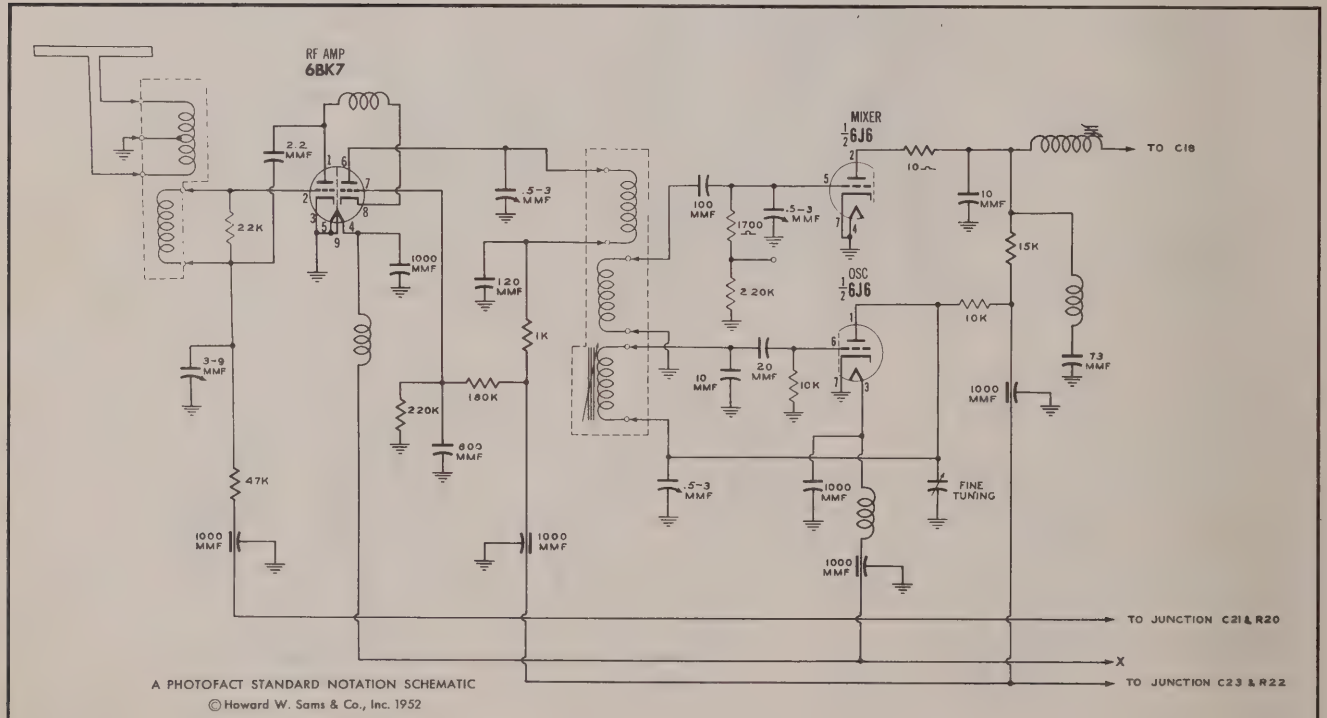


FIG. 6

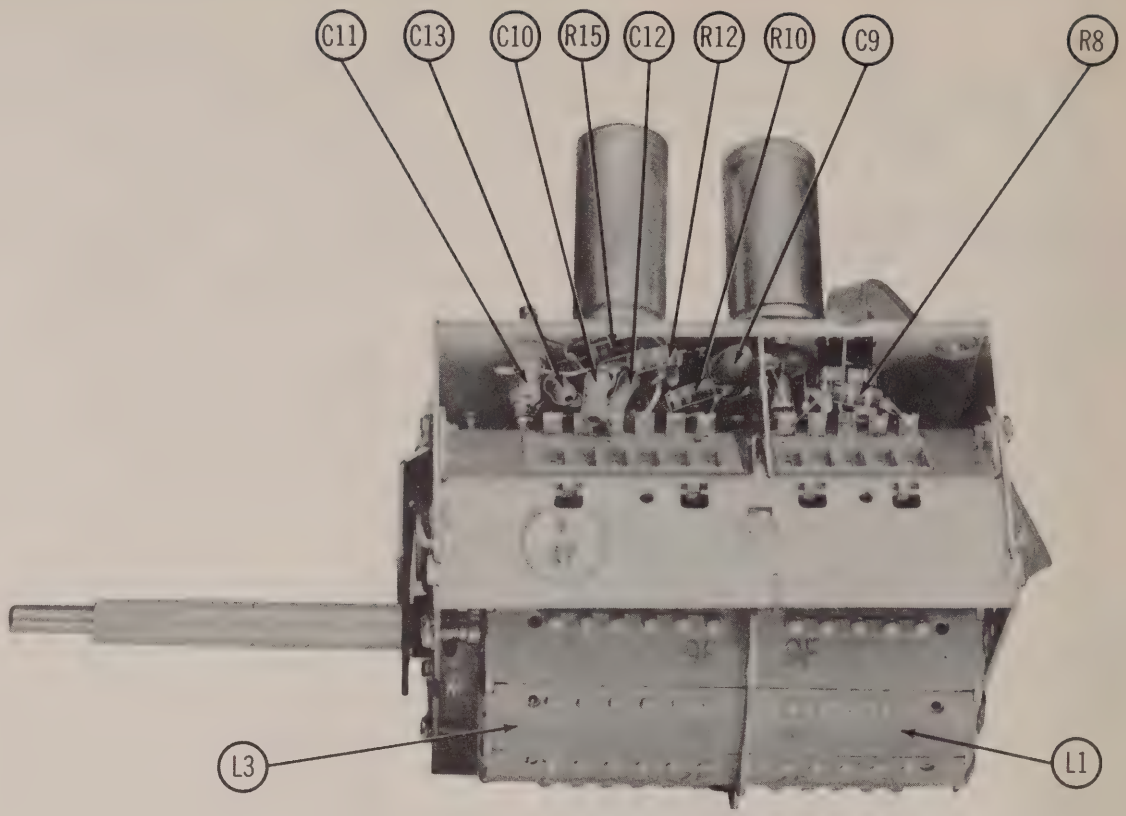
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	150KΩ	0Ω	.1Ω	0Ω	†4.5KΩ	†4.5KΩ	0Ω		
V 2	6J6	†7KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	105KΩ	47Ω	0Ω	.1Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 4	6CB6	100KΩ	47Ω	.1Ω	0Ω	†3.3KΩ	†3.3KΩ	0Ω		
V 5	6CB6	7.5KΩ	150Ω	.1Ω	0Ω	†3.3KΩ	†3.3KΩ	0Ω		
V 6	12AX7	0Ω	4.7KΩ	.2Ω	.1Ω	.1Ω	†110KΩ	130KΩ	4.7KΩ	0Ω
V 7	6CB6	1Meg	140Ω	.1Ω	0Ω	†8KΩ	†2.2KΩ	140Ω		
V 8	6AU6	†20KΩ	†1.2KΩ	¶.3	¶0Ω	200KΩ	†250Ω	†1.2KΩ		
V 9	6AU6	1.6Ω	0Ω	.1Ω	0Ω	†3.3KΩ	†3.3KΩ	82Ω		
V 10	6AL5	INF	INF	0Ω	.1Ω	10KΩ	0Ω	10KΩ		
V 11	6AV6	10Meg	0Ω	0Ω	.1Ω	0Ω	0Ω	†500KΩ		
V 12	6AQ5	500KΩ	330Ω	0Ω	.1Ω	†1.5KΩ	†1KΩ	500K		
V 13	12AU7	†470KΩ	5.1Meg	0Ω	.1Ω	.1Ω	†6.2KΩ	†470KΩ	2.7KΩ	0Ω
V 14	6AV6	1.6Meg	0Ω	0Ω	.1Ω	0Ω	570KΩ	#1.1Meg		
V 15	12BH7	#2.5KΩ	1Meg	3.2KΩ	.1Ω	.1Ω	#2.5KΩ	1Meg	3.2KΩ	0Ω
V 16	6SN7GT	1.1Meg	†60KΩ	300KΩ	250KΩ	†68KΩ	0Ω	.1Ω	0Ω	
V 17	6AU5GT	470KΩ	.1Ω	220Ω	INF	#26Ω	INF	0Ω	†7KΩ	
V 18	6W4GT	INF	INF	180KΩ	INF	†250Ω	200KΩ	#24Ω	#24Ω	
V 19	1B3GT	PINS 1-8 HAVE INF RESISTANCE								TOP CAP #446Ω
V 20	5U4G	INF	19KΩ	INF	80Ω	INF	80Ω	INF	19KΩ	
V 21	20CP4	0Ω	12KΩ	PIN 10 †250Ω	PIN 11 150KΩ	PIN 12 .1Ω				

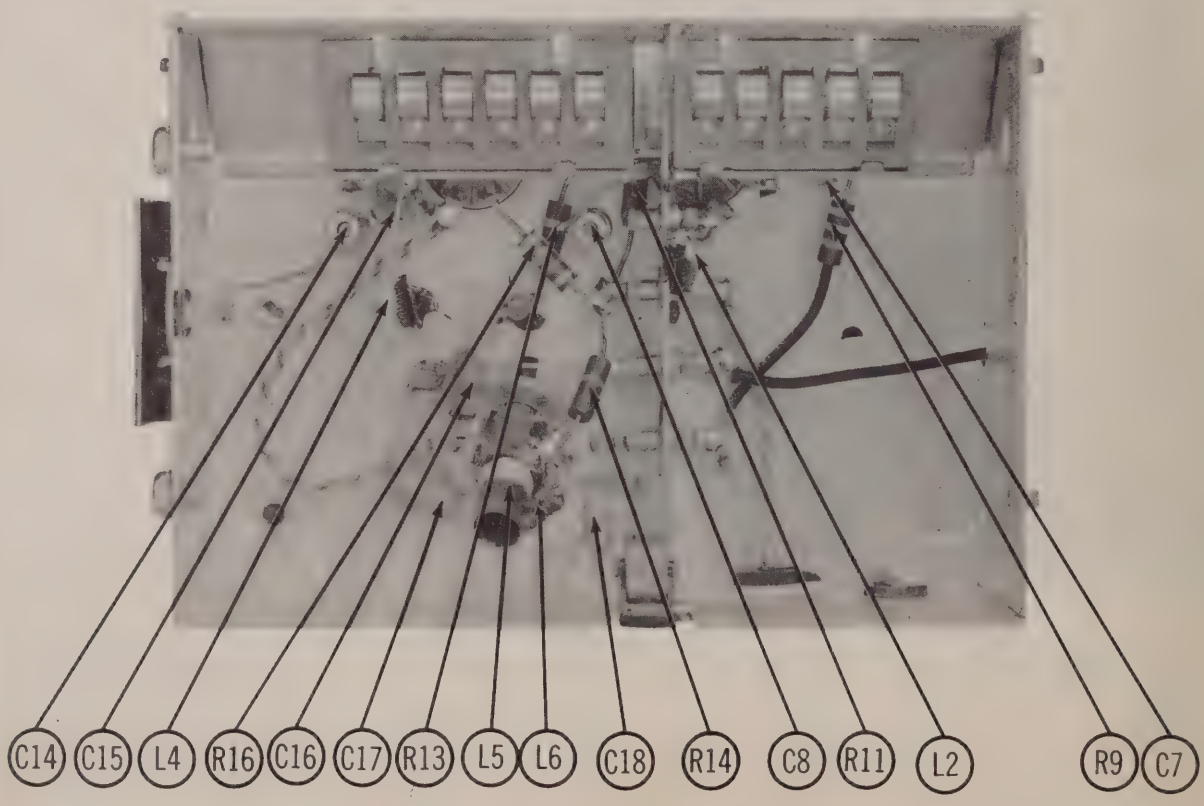
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V20
# MEASURED FROM PIN 3 OF V18
¶ MEASURED FROM PIN 4 OF V8



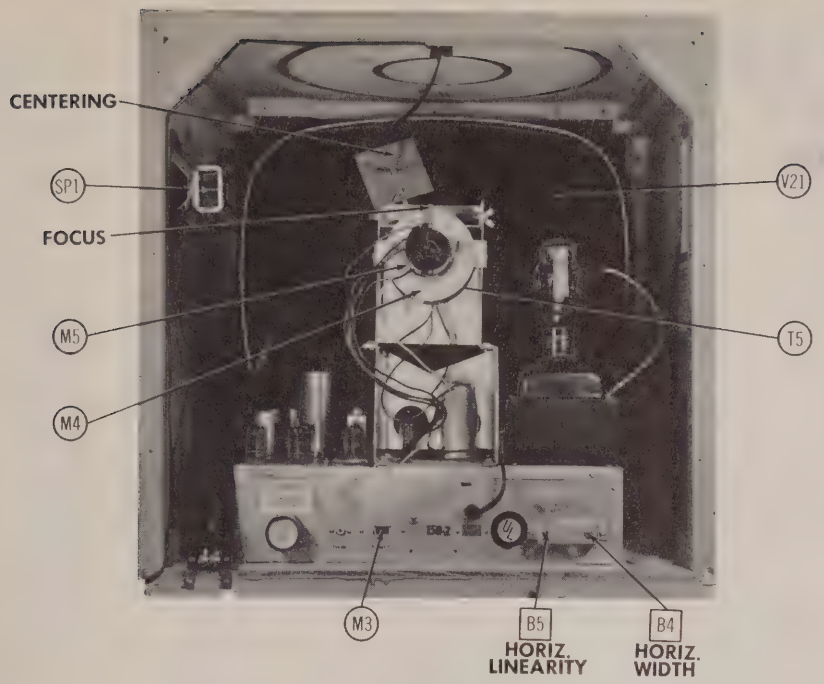
ALTERNATE TUNER SCHEMATIC



RF TUNER-LEFT SIDE



RF TUNER-BOTTOM VIEW



CABINET–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern.

Set the horizontal hold control fully counter clockwise and the horizontal lock trimmer (B1) fully clockwise.

Turn the horizontal frequency slug (B2) counter clockwise until the picture loses sync, then clockwise until picture just falls into synchronization.

Turn the horizontal hold control to the middle of its range and adjust the horizontal drive trimmer (B3) counter clockwise as far as possible without crowding of the picture. Adjustment of B3 may make it necessary to readjust B2, as before, to maintain sync.

With the horizontal hold at maximum clockwise position, momentarily interrupt the signal by switching to another channel, then return to original channel. Turn the horizontal hold control slowly counter clockwise and note the least number of diagonal bars present just before picture falls into sync. If this number is not between 2 and 4 adjust B1 for that condition.

Adjust the width slug (B4) for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug (B5) for a symmetrical picture from left to right.

HORIZONTAL WAVEFORM ADJUSTMENT

Connect the vertical amplifier of an oscilloscope to terminal C of L19. If necessary adjust the horizontal waveform slug (B6) for a waveform on the scope similar to fig. 7, with broad and narrow peaks of equal height.

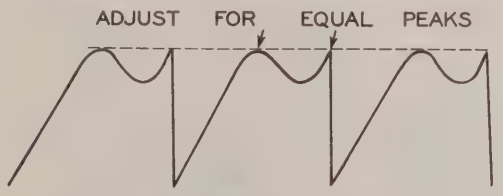


FIG. 7

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control from front panel.
2. Remove 8 wood screws. Remove rear cover.
3. Disconnect built-in antenna .
4. Remove 2 wood screws. Remove antenna strip.
5. Disconnect speaker plug.
6. Remove 4 speaker nuts. Remove speaker.
7. Remove 4 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CH	
B	RF Amplifier	6BC5	7BD		
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CH	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CH	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CH	
V6	Video Detector - Noise Balance	12AX7	12AX7	9A	
V7	Video Output	6CB6	6CB6	7CH	
V8	AGC Keying	6AU6	6AU6	7BK	
V9	Sound IF Amp.	6AU6	6AU6	7BK	
V10	Ratio Detector	6AL5	6AL5	6BT	
V11	AF Amplifier	6AV6	6AV6	7BT	
V12	Audio Output	6AQ5GT	6AQ5GT	7BZ	
V13	Sync. Seperater - Sync Amplifier	12AU7	12AU7	9A	
V14	Bias Rectifier - Vert. Oscillator	6AV6	6AV6	7BT	
V15	Vert. Output	12BH7	12BH7	9A	
V16	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6AU5GT	6AU5GT	6CK	
V18	Damper	6W4GT	6W4GT	4CG	
V19	H.V.Rectifier	1B3GT	1B3GT	3C	
V20	L.V. Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: SYLVANIA PART No.		RTMA BASE TYPE	NOTES
A	20CP4	20CP4		12D	① Used in Models 150-7
		20CP4A ⑤		12D	② Used in Model 150-11
		20DP4 ⑤		12D	③ Used in Model 150-81
		20DP4A ⑤ ⑥		12D	④ Used in Models 150-5, 150-51
		20EP4 ⑤ ⑥		12C	⑤ Circuit changes necessary
		20HP4A ⑤ ⑥		12C	⑥ 5/16" longer
		20LP4 ⑤ ⑥		12C	
B	17HP4 ①	20MP4 ⑤ ⑥		12C	
		17HP4		12C	
		17RP4		12C	
C	21AP4 ②	21AP4		12D	
D	21MP4 ③			12C	
E	23AP4 ④			12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	450	PMA-42000	AFH2-62		UPT8145		TVL-2778	▫ Filter
B	10	400							▲ Audio Output Dec.
C2A	40	450	PMA-42001	AFH3-44		UPT44445		TVL-3787	▫ Filter
B	50	350							■ Decoupling
C	50	300							▲ Decoupling
C3	20	300	PMA-42006	PRS450/20		BR2035A		TVA-1608	Vert. Output Decoupling
C4	100	50	PMA-42005	PRS50/100		BRH501		TVA-1310	Vert. Output Cathode
C5	20	300	PMA-42006	PRS450/20		BR2035A		TVA-1608	Vert. Osc. Decoupling
C6	1	50	PMA-42002	PRS150/4		BBR-1-50T		TVA-1300	Stabilizing Cap.
C7	3-9				829-10				Variable Trimmer
C8	.5-3				829-3				Variable Trimmer
C9	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Decoupling
C10	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C11	.5-3				829-3				Variable Trimmer
C12	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C13	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C14	.5-3				829-3				Variable Trimmer
C15	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Conv. Fil. Bypass
C16	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C17	73								Fixed Padder
C18	300			SI300	D6-301	TM5T3	GP2K-301	5GA-T3	IF Coupling
C19	1		PMA-40519-1		TCZ-1		NP0K-010		IF Coupling
C20	12				TCZ-12		NP0K-120		Fixed Trimmer
C21	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	AGC Filter
C22	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	1st. Video IF Dec.
C23	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Bypass
C24	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	AGC Filter
C25	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	2nd. Video IF Dec.
C26	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Bypass
C27	100		PMB-40518-14	SI100N750	TCN-100		N750L-101	5TCU-T1	IF Coupling
C28	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	3rd. Video IF Dec.
C29	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	3rd. Video IF Cathode
C30	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	3rd. Video IF Fil.
C31	5		PMB-40518-1	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	Video Det. Filter
C32	5000		PMA-40517-3	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Video Coupling
C33	220		PMB-40518-'	SI220	D6-221	SR5T25	GP2K-221	5GA-T22	Video Amp. Cathode
C34	56				TCZ-56		NP0-333-560		Fixed Trimmer
C35	.1	600	PMB-41006-51	P688-1	DF-104		PTE6P1	6TM-P1	Video Coupling
C36	.05	400	PMB-41006-30	P488-05	DF-503		PTE485	4TM-S5	RF Bypass
C37	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Bias Filter
C38	.02	400	PMB-41006-28	P488-02	DF-203	PTE4S2		4TM-S2	Noise Pulse Coupling
C39	220	1500	PMA-40005-1						Horiz. Feedback
C40	47	500	PMB-40003-15	1469-00005		5R5Q5		MS-45	Horiz. Feedback
C41	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Bias Filter
C42	.5	150	PMA-41008	P288-5		PJ2P5		2TM-P5	AGC Filter
C43	2.2		PMB-40519-3		TCZ-2.2		NP0K-3R2		Sound IF Coupling
C44	56				TCZ-56		NP0-333-560		Fixed Trimmer
C45	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Sound IF Decoupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No	IDENTIFICATION CODES AND INSTALLATION NOTES
C46	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Sound IF Cathode
C47A	1500		PMA-40517-4	BPD-2X0015	DD-2-152	TM5DD15	812-0015	5HK-2D15	Diode Load Cap.
B	1500								Diode Load Cap.
C48	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	RF Bypass
C49	5000		PMB-40518-32	SI5000	D6-502	TM5D5	GP2-333-502	5HK-D5	De-Emphasis
C50	.01	400	PMB-41006-7	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C51	5000		PMA-40517-3	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C52A	.005								Audio Coupling
B	250		†PMA-95001		†PC-70				AF Amp. Plate Bypass
C									Audio Output Grid
C53	.01	600	PMB-41006-45	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C54	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Fil. Bypass
C55	2000		PMB-40518-27	SI2000	D6-202	TM5D2	GP2-333-202	5HK-D2	Sync Coupling
C56	150		PMB-40518-17	SI150	D6-151	TM5T15	GP2K-151	5GA-T15	Sync. Coupling
C57A	.002								Vert. Integrator Net.
B	.005		♦PMA-95000						Vert. Integrator Net.
C	.005								Vert. Integrator Net.
C58	4700	500	PMB-40003-63	1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C59	1500		PMA-40517-2	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Vert. Hold Cont. Bypass
C60	1500		PMB-40518-24	SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	Fixed Trimmer
C61	1500		PMB-40518-24	SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	Vert. Osc. Plate
C62	470		PMA-40518-23	SI470	D6-471		GP2K-471	5GA-T47	Vert. Feedback
C63	.05	600	PMB-41006-49	P688-05		PTE6S5		6TM-S5	Vert. Discharge
C64	.1	600	PMB-41006-51	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C65	180	500	PMB-40003-29	1469-0002		5R5T2		MS-32	Horiz. Sync Coupling
C66	2200	500	PMB-40003-55	1464-0025		1R5D25			Horiz. Sync Coupling
C67	.05	400	PMB-41006-30	P488-05	DF-503	PTE485		4TM-S5	Horiz. AFC Plate
C68	.25	200	PMB-41006-15	P488-25		PJ2P25		2TM-P25	Horiz. AFC Filter
C69	.02	400	PMB-41006-28	P488-02	DF-203	PTE4S2		4TM-S2	Horiz. AFC Filter
C70	390	500	PMB-40003-37	1469-0004		5R5T4		MS-34	Horiz. Osc. Grid Cap.
C71	.01	400	PMA-41009	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Fixed Trimmer
C72	47	500	PMB-40003-15	1469-00005		5R5Q5		MS-45	Horiz. Feedback
C73	100		PMB-40518-14	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Voltage Divider
C74	1000	500	PMB-40003-47	1464-001		1R5D1		MS-21	Horiz. Discharge
C75	.001	600	PMB-41006-39	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sweep Coupling
C76	.025	600	PMB-41006-47	P688-025		PJ6S25		6TM-S32	Horiz. Output Screen
C77	.25	200	PMB-41006-15	P488-25		PJ2P25		2TM-P25	Horiz. Output Cathode
C78	.04	400	PMB-41006-76	P688-04		PTE6S4		6TM-S4	Damper Filter
C79	100	1500	PMA-40005-2						Fixed Trimmer
C80	.03	600	PMB-41006-29	P688-03		PTE6S3		6TM-S3	Damper Plate
C81	.25	600	PMB-41006-53	684-25		PTE6P25		6TM-P25	Horiz. Sweep Coupling
C82	500	20000	PMA-40004	HV20C	TV3-502	MM-C20T5			HV Filter
C83	.01	600	PMA-41007-45	689ZGXY-01		PJ6S1		6TM-S1	Line Filter
C84	.01	600	PMA-41007-45	689ZGXY-01		PJ6S1		6TM-S1	Line Filter

† Items C52A, C52B, C52C, R46A, R46B are combined in one unit.
♦ Items C57A, C57B, C57C, R59A, R59B, R59C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	5000Ω	½	PMA-48016	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	SQ	FKS-1/4	AK-1	Attach to R1A per instructions
R2A	2.5Meg	½	PMB-48014-5	Q11-239	AG-84-S	B-83	Height Control
B	Shaft		Not Req.	SQ	FKS-1/4	Not Req.	Attach to R2A per instructions
R3A	100KΩ	½	PMB-48014-2	Q11-128	AG-49-S	B-40	Brightness Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	Not Req.	Attach to R3A per instructions
R4A	250KΩ	½	PMB-48014-3	Q11-130	AG-55-S	B-50	Noise Balance Control
B	Shaft		Not Req.	SQ	FKS-1/4	Not Req.	Attach to R4A per instructions
R5A	1Meg	½	PMB-48014-7	Q11-137	AG-61-S	B-69	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R5A per instructions
R6A	50KΩ	½	PMB-48014-1	Q11-123	AG-44-S	B-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R6A per instructions
R7A	750Ω	½	PMB-48015		RTV-247		Contrast Control - Panel
B	500KΩ	½					Volume Control & SW - Rear

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ	20%			RF Amp. Grid
R10	10KΩ	½		BTS-10K	RF Coil Shunt
R11	2200Ω	20%		BTS-2200	RF Amp. Decoupling
R12	4700	½		BTS-4700	Mixer Grid
R13	220KΩ	20%			Mixer Grid
R14	15KΩ	20%			Mixer Plate
R15	10KΩ	½		BTS-10K	Osc. Grid
R16	4700Ω	½		BTS-4700	Osc. Plate
R17	4700Ω	½	PMA-45015-33	BTS-4700	1st. Video IF Amp. Grid
R18	47Ω	½	PMA-45015-9		1st. Video IF Amp. Cathode
R19	1000Ω	½	PMA-45015-25	BTS-1000	1st. Video IF Amp. Decoupling
R20	330Ω	½	PMA-45015-19	BTS-330	AGC Network
R21	10KΩ	½	PMA-45015-37		2nd. Video IF Coil Shunt
R22	150Ω	½	PMA-45015-15	BTS-150	Decoupling
R23	47Ω	½	PMA-45015-9		2nd. Video IF Amp. Cathode
R24	1000Ω	½	PMA-45015-25	BTS-1000	2nd. Video IF Amp. Decoupling
R25	7500Ω	½	PMA-45015-70		3rd. Video IF Amp. Grid
R26	150Ω	½	PMA-45015-15	BTS-150	3rd. Video IF Amp. Cathode
R27	1000Ω	½	PMA-45015-25	BTS-1000	3rd. Video IF Amp. Decoupling
R28	4700Ω	½	PMA-45015-33	BTS-4700	Video Det. Load
R29	1Meg	½	PMA-45015-61	BTS-1Meg	Video Output Grid
R30	2200Ω	½	PMA-45015-29	BTS-2200	Video Output Cathode
R31	6800Ω	2	PMA-45019-35	BTB-6800	Video Output Plate
R32	100KΩ	½	PMA-45015-49	BTS-100K	Isolation
R33	39KΩ	½	PMA-45015-44	BTS-39K	Isolation
R34	39KΩ	½	PMA-45015-44	BTS-39K	AGC Grid
R35	100KΩ	½	PMA-45015-49	BTS-100K	Picture Tube Cathode
R36	10KΩ	½	PMA-45015-37	BTS-10K	Picture Tube Grid
R37	270KΩ	½	PMA-45015-54	BTS-270K	Voltage Divider
R38	82Ω	½	PMA-45015-12	BTS-82	Sound IF Amp. Cathode
R39	1000Ω	½	PMA-45015-25	BTS-1000	Sound IF Amp. Decoupling

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R40	270Ω	½	PMA-45015-18	BTS-270	Balancing
R41	47KΩ	½	PMA-45015-45	BTS-47K	De-emphasis
R42	10KΩ	½	PMA-45015-37	BTS-10K	Ratio Det. Diode Load
R43	10KΩ	½	PMA-45015-37	BTS-10K	Ratio Det. Diode Load
R44	1Meg	½	PMA-45015-61	BTS-1Meg	Series Phono
R45	10Meg	½	PMA-45015-73	BTS-10Meg	AF Amp. Grid
R46A	500KΩ	½	†PMA-95001		AF Amp. Plate
B	500KΩ	½			Output Grid
R47	330Ω	1	PMA-45017-19	BTA-330	Output Cathode
R48	820Ω	2	PMA-45019-24	BTB-820	Output Decoupling
R49	27KΩ	½	PMA-45015-42	BTS-27K	Noise Balance Grid
R50	390KΩ	½	PMA-45015-56	BTS-390K	Voltage Divider
R51	100KΩ	½	PMA-45015-49	BTS-100K	AGC Network
R52	100KΩ	½	PMA-45015-49	BTS-100K	AGC Network
R53	4.7Meg	½	PMA-45015-59	BTS-4.7Meg	Sync Seperator Grid
R54	470KΩ	½	PMA-45015-57	BTS-470K	Isolation
R55	470KΩ	½	PMA-45015-57	BTS-470K	Sync Seperator Plate
R56	2700Ω	½	PMA-45015-30	BTS-2700	Sync Amp. Cathode
R57	1800Ω	½	PMA-45015-28	BTS-1800	Sync Amp. Plate
R58	2200Ω	½	PMA-45015-29	BTS-2200	Sync Amp. Plate
R59A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	♦PMA-95000	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R60	1Meg	½	PMA-45015-61	BTS-1Meg	Vert. Osc. Grid -See Note
R61	270KΩ	½	PMA-45015-54	BTS-270K	Vert. Osc. Plate
R62	47KΩ	½	PMA-45015-45	BTS-47K	Vert. Osc. Decoupling
R63	150KΩ	½	PMA-45015-51	BTS-150K	Vert. Osc. Transformer Shunt
R64	220KΩ	½	PMA-45015-53	BTS-220K	Noise Balance Bias Filter
R65	100KΩ	½	PMA-45015-49	BTS-100K	Noise Balance Bias Filter
R66	8200Ω	½	PMA-45015-36	BTS-8200	Vert. Peaking
R67	2200Ω	½	PMA-45015-29	BTS-2200	Vert. Peaking
R68	47Ω	½	PMA-45015-9		Parasitic Suppressor
R69	1Meg	½	PMA-45015-61	BTS-1Meg	Vert. Output Grid
R70	470Ω	1	PMA-45015-21	BTS-470	Vert. Output Cathode
R71	820KΩ	½	PMA-45015-60	BTS-820K	Horiz. AFC Grid
R72	150KΩ	1	PMA-45017-51	BTA-150K	Horiz.AFC Cathode
R73	150KΩ	1	PMA-45017-51	BTA-150K	Horiz. AFC Cathode
R74	8200Ω	½	PMA-45015-36	BTS-8200	Horiz. AFC Filter
R75	120KΩ	1	PMA-45017-50	BTA-120K	Voltage Divider
R76	68KΩ	1	PMA-45017-47	BTA-68K	Voltage Divider
R77	10KΩ	½	PMA-45015-37	BTS-10K	Horiz. Feedback
R78	150KΩ	½	PMA-45015-51	BTS-150K	Horiz. Feedback
R79	100KΩ	½	PMA-45015-49	BTS-100K	Horiz. Feedback
R80	2.7Meg	1	PMA-45017-66	BTA-2.7Meg	Voltage Divider
R81	100KΩ	1	PMA-45017-49	BTA-100K	Horiz. Osc. Grid
R82	68KΩ	1	PMA-45017-47	BTA-68K	Horiz. Osc. Plate
R83	8200 Ω	½	PMA-45015-36	BTS-8200	Horiz. Osc. Transformer Shunt
R84	470KΩ	½	PMA-45015-57	BTS-470K	Horiz. Output Grid
R85	220Ω	4	PMB-47007-3		Horiz. Output Cathode - Wire Wound
R86	6800Ω	2	PMA-45019-35	BTB-6800	Horiz. Output Screen
R87	1000Ω	1	PMA-45017-25	BTA-1000	Decoupling
R88	3.3Ω	½	PMA-45013-1		HV Rectifier Filament
R89	470KΩ	1	PMA-45017-57		HV Filter
R90	80Ω	6	PMB-47007-4		Current Limiting - Wire Wound
R91	250Ω	15	PMB-47007-5	2D-250	Filter - Wire Wound
R92	1000Ω	7.5	PMB-47007-1	1 3/4A-1000	Voltage Divider - Wire Wound
R93	1000Ω	7.5	PMB-47007-1	1 3/4A-1000	Voltage Divider - Wire Wound
R94	27KΩ	1	PMA-45017-42	BTA-27K	Voltage Divider - Wire Wound
R95	220KΩ	½	PMA-45015-53	BTS-220K	Line Isolation

Note. Some Models use a 820KΩ Resistor in this application
† Items R46A, R46B, C52A, C52B, C52C are combined in one unit
♦ Items R59A, R59B, R59C, C57A, C57B, C57C are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC ② 1.9A	700VCT ② .220ADC	5VAC ③ 3A	6.3VAC ③ .3A SEC#4 6.3VAC ③ 1.2A SEC#5 6.3VAC ③ 14A	PMB-50003			

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: MERCURY PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	180Ω	1000Ω	PMA-56005-2 PMA-56005 ①	A-8111	A-3000	TB0-1	Vert. Osc. Trans.
T3	440Ω Tap ③ 4Ω ② 20Ω	35Ω Tap ③ 4Ω 11.7Ω, 31.7Ω	PMC56002		HV0-7		Horiz. Output Trans.
T4	1500Ω Tap ③ 5Ω		PMA56004	A-8141	A-3039		Vert. Output Trans.
T5A	24Ω		PMA-56000	DY-9	MDF-70		Horiz. Deflection Coils
B	45Ω						Vert. Deflection Coils

① Alt. Vert. Osc. Trans.

MERCURY
MODELS 2013, 2113, 2115, 2401, 4120, 4220, 4317, 4320

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MERCURY PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	7.5KΩ	3.3Ω	425Ω	.6Ω	PMB-51005	A-3878	A-2931	RO-13	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MERCURY PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.3Ω		ST-105 Mod. P5-X	5A07	
	CONE DIA.	V. C. DIA.				
SP1B	5"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MERCURY PART No.	MERIT PART No.	
L1	Ant. Coils	0Ω				
L2	Fil. Choke	0Ω				
L3	RF, Mixer Grid & Osc. Coils	0Ω				
L4	Fil. Choke	0Ω				
L5	Conv. Plate	.6Ω				
L6	RF Choke	.4Ω				
L7	1st. Video IF	.2Ω		PMA-52021	TV-112	
L8	21.6MC Trap	.2Ω		PMA-52020	TV-150	
L9	2nd. Video IF	.2Ω	.2Ω	PMA-52029		
L10	3rd. Video IF	.2Ω		PMA-52021	TV-112	
L11	4th. Video IF	.2Ω	.2Ω	PMA-52029-2		
L12	Peaking Coil	6.5Ω		PMA-52023	TV-181	100 Microhenries
L13	Peaking Coil	16Ω		PMA-52024		450 Microhenries
L14	4.5MC Trap	1.6Ω		PMA-52028-2	TV-151	
L15	Peaking Coil	9.8Ω		PMA-52025	*TV-184	200 Microhenries, wound on 22KΩ resistor
L16	Peaking Coil	16Ω		PMA-52024	TV-188	450 Microhenries
L17	Sound IF	1.6Ω		PMA-52028-1	TV-151	
L18	Ratio Det.	5.5Ω	.7Ω	PMA-52027		Tertiary Winding .4Ω
L19	Horiz. Osc.	78Ω	47Ω	PMB-52019	TV-162	Tap ⓐ 22Ω
L20	Width Coil	6Ω		PMA-56003		
L21	Horiz. Lin.	6Ω		PMA-56001		Tap ⓑ 1.8Ω

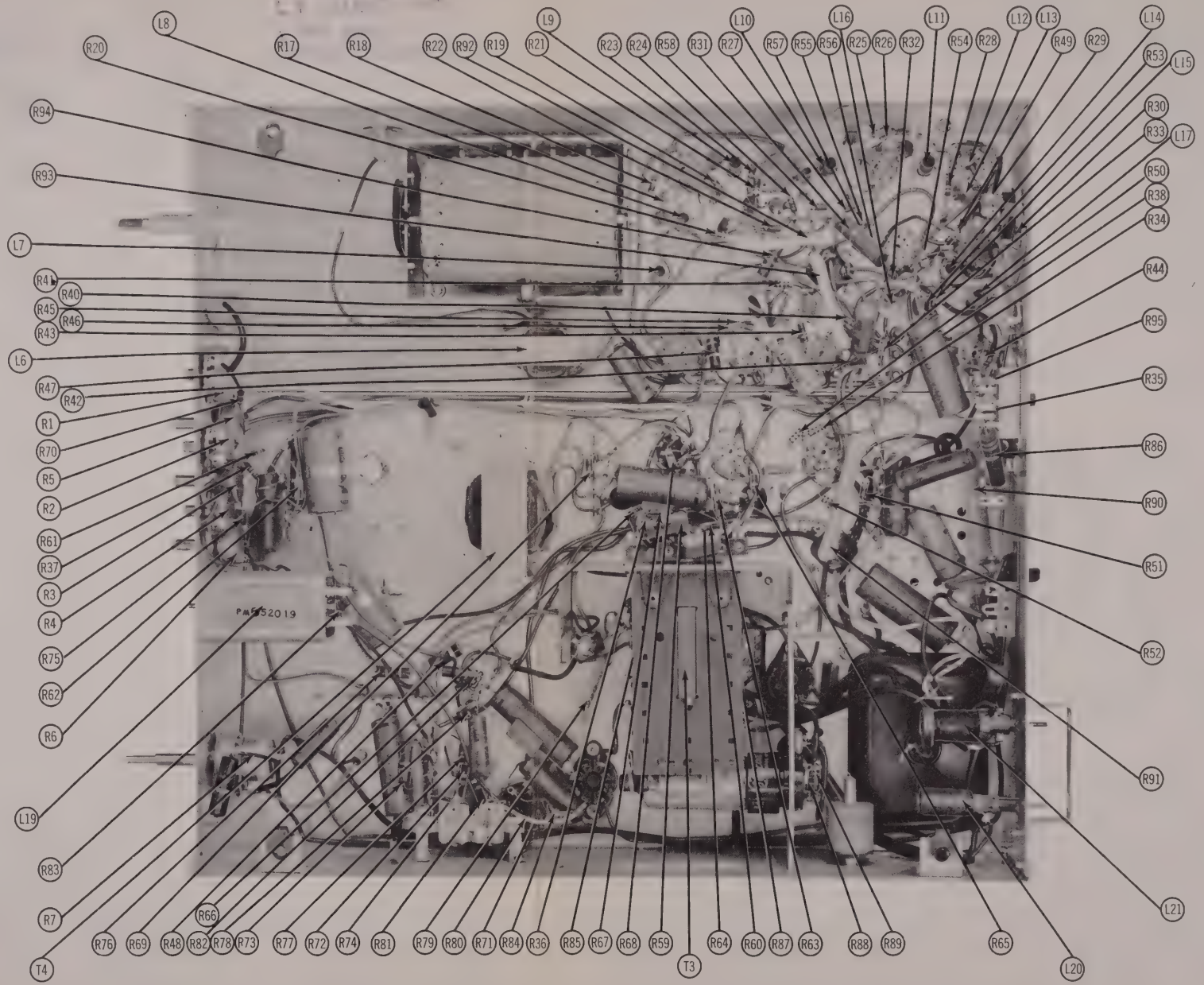
* Parallel with 22K Resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MERCURY PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG	1/4A	PMA-95002-1	PMA-97069	312.250	357001	AGC-1/4	4405

MISCELLANEOUS

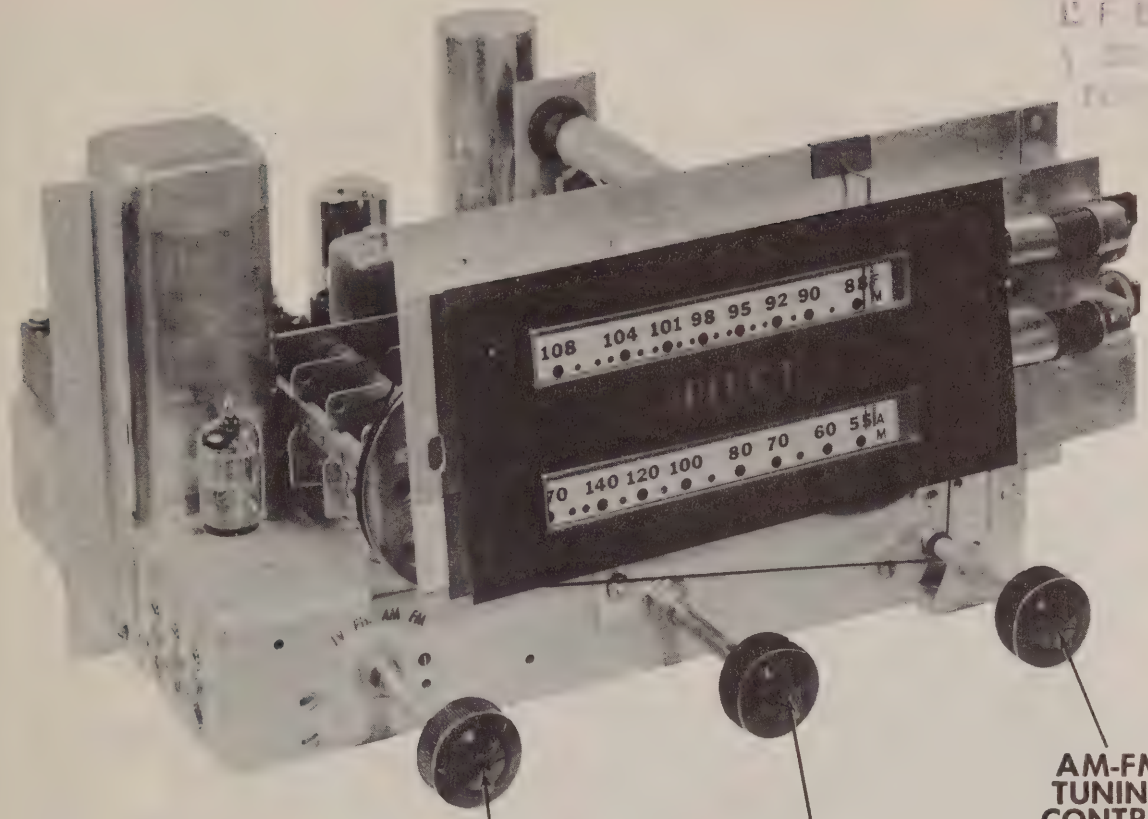
ITEM No.	PART NAME	MERCURY PART No.	NOTES
M2	RF Tuner		Standard Coil used in Models 4120, 4220, 2013 & 4320. Standard Cascode used in Models 2401, 2113 & 2115. Sarkes used in Model 4317.
M3	Switch		TV-Phono
M4	Focus Magnet	PMB-56008	
M5	Ion Trap	PMA-56009	
B1, B3	Trimmer	PMA-43001	(Dual) Horiz. Lock (9-180MMF), Horiz. Drive (80-480MMF)



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF

PILOT
MODEL AF-605



PILOT
MODEL AF-605

TRADE NAME	Pilot Model AF-605
MANUFACTURER	Pilot Radio Corp., 37-06 36th St., Long Island City, N. Y.
TYPE SET	AC Operated AM-FM Superheterodyne Tuner with Self Contained Power Supply.
TUBES (TEN)	Types 6BA6 FM RF Amp., 6BE6 FM Conv., 6BA6 1st. FM IF Amp. 6BA6 2nd. FM IF Amp., 6AL5 Ratio Det., 6BA6 AM RF Amp., 6BE6 AM Conv., 6BA6 AM IF Amp., 6AT6 Det.-AVC-AF Amp., 6X5GT Rectifier
POWER SUPPLY	110-120 Volts AC - 60 Cycles — RATING .270 Amp. @ 117 Volts AC
TUNING RANGE - BROADCAST	535-1720KC — FREQ. MOD. 88-108MC

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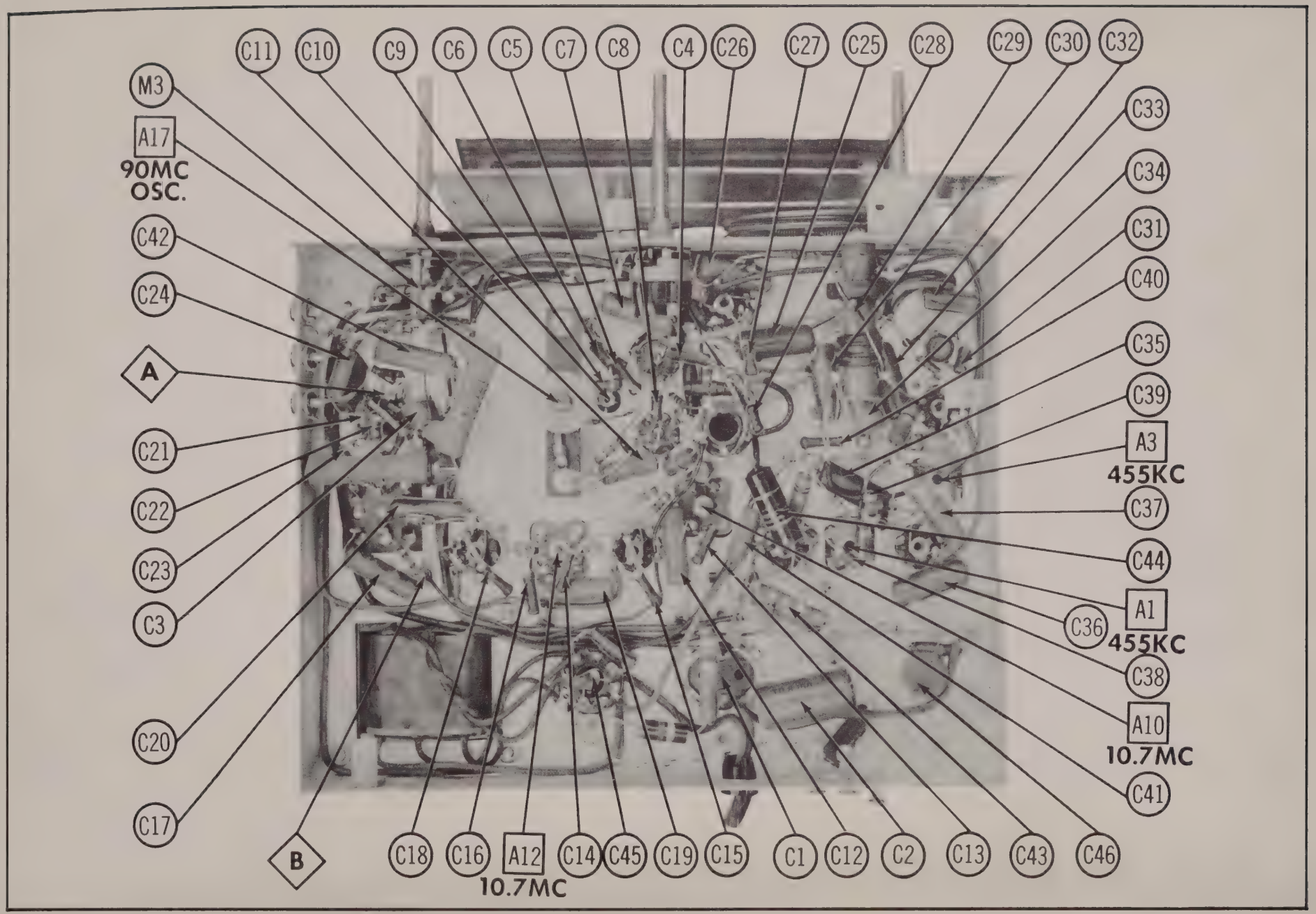
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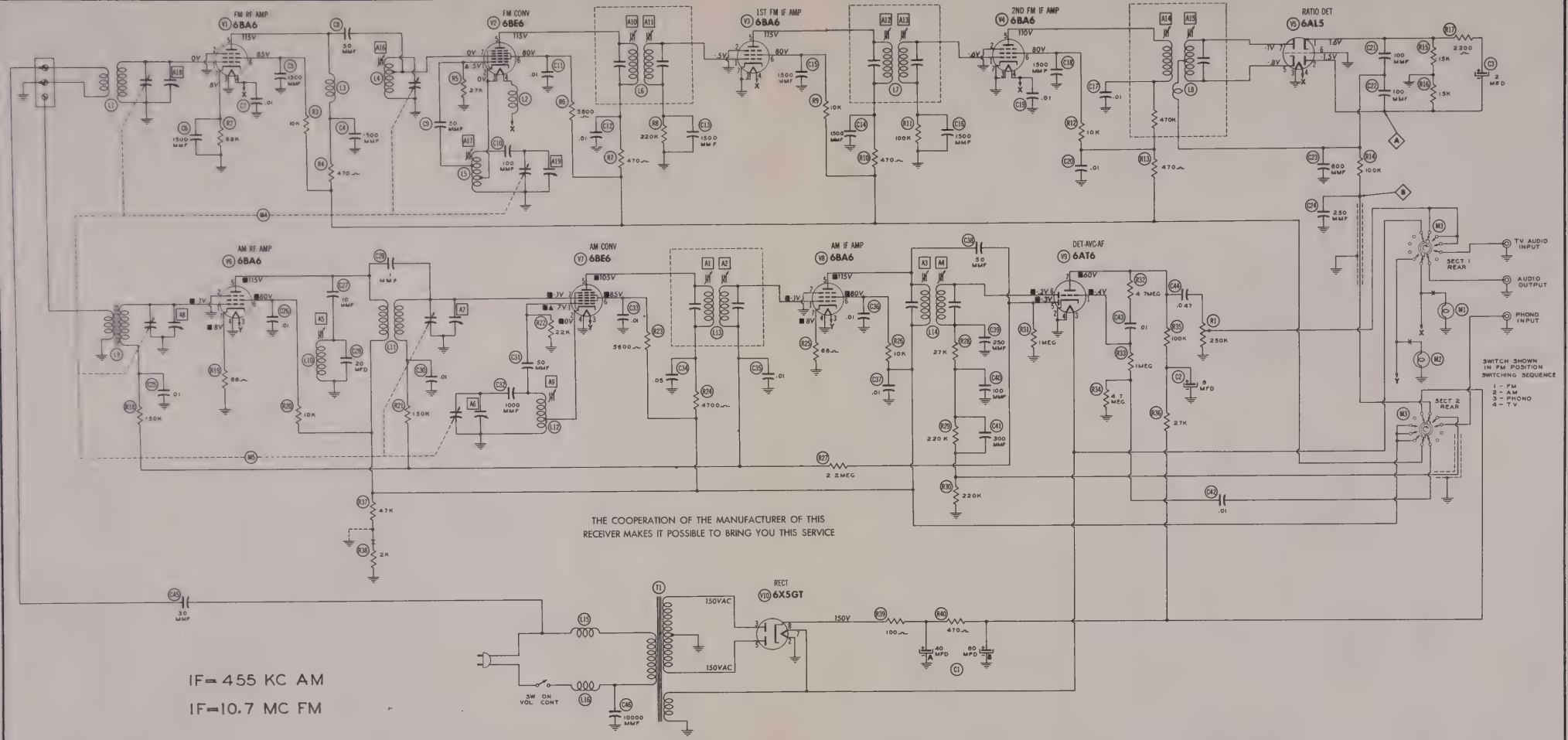

IF = 455 KC AM

IF = 10.7 MC FM

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6BA6	0Ω	0Ω	0Ω	.1Ω	†1KΩ	†10KΩ	68Ω	
V 2	6BE6	27KΩ	0Ω	0Ω	.2Ω	†1KΩ	†6.2KΩ	0Ω	
V 3	6BA6	220KΩ	0Ω	0Ω	.1Ω	†1KΩ	†10KΩ	0Ω	
V 4	6BA6	100KΩ	0Ω	0Ω	.1Ω	†1.5KΩ	†1KΩ	0Ω	
V 5	6AL5	15KΩ	15KΩ	0Ω	.1Ω	INF	0Ω	INF	
V 6	6BA6	3.3Meg	0Ω	■.1Ω	0Ω	■†570Ω	■†10KΩ	68Ω	
V 7	6BE6	22KΩ	.3Ω	■.1Ω	0Ω	■5.3KΩ	■†6.2KΩ	3.3Meg	
V 8	6BA6	3.2Meg	0Ω	■.1Ω	0Ω	■†570Ω	■†10KΩ	68Ω	
V 9	6AT6	5.7Meg	0Ω	■.1Ω	0Ω	1Meg	470KΩ	†130 KΩ	
V 10	6X5GT	0Ω	0Ω	157Ω	INF	150Ω	INF	.1Ω	50KΩ

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
■ MEASURED IN "AM" POSITION
▲ TAKEN WITH VACUUM TUBE VOLTMETER
† MEASURED FROM PIN 8 OF V10

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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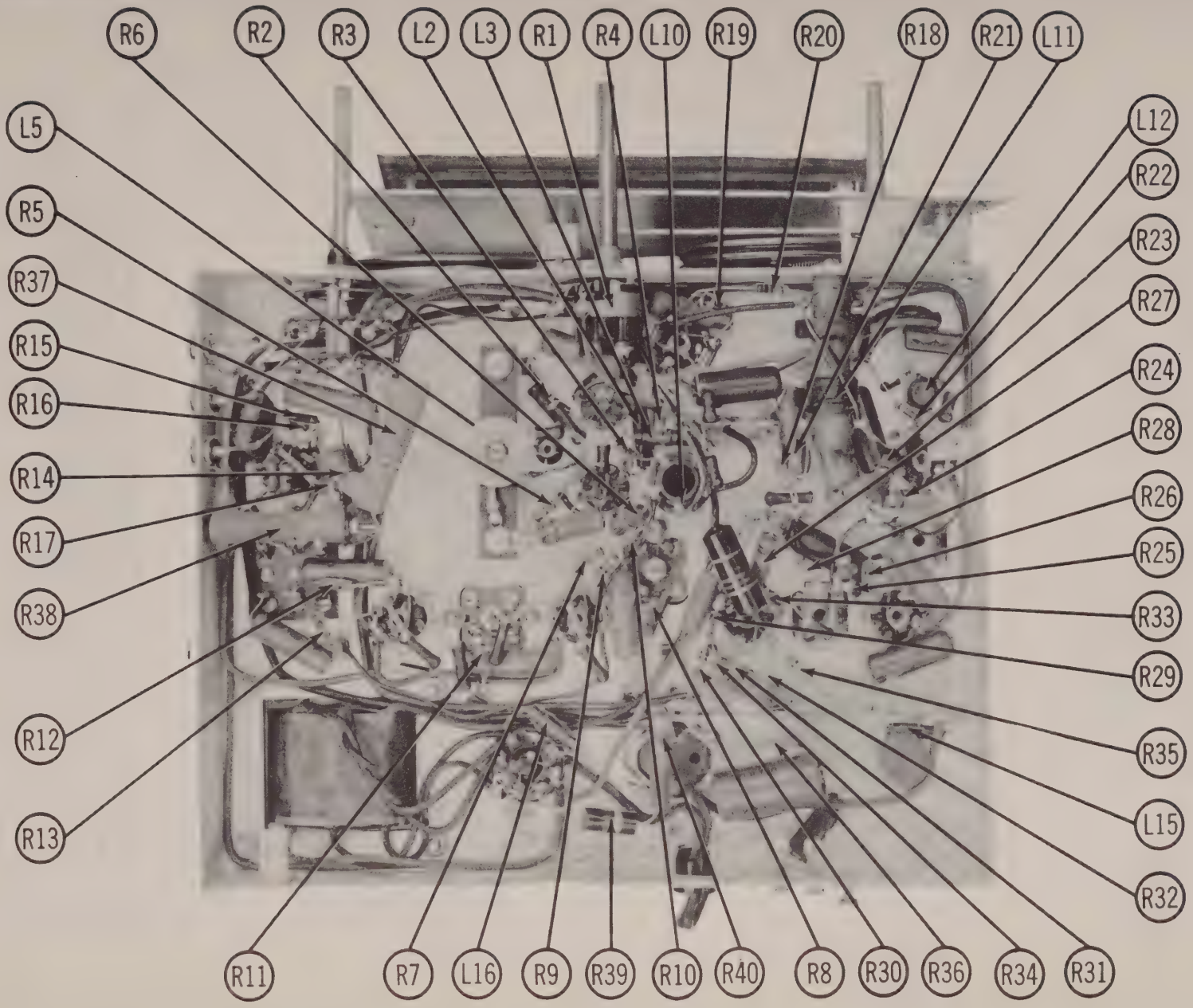
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R16
R14
R17
R38
R12
R13
L12
R22
R23
R27
R24
R28
R26
R25
R33
R29
R35
L15
R32
R11
R7
L16
R9
R39
R10
R40
R8
R30
R36
R34
R31

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Connect the tuner output to an audio amplifier for purposes of monitoring during alignment.
To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V7). Low side to chassis.	455KC (400∿Mod.)	AM	550KC	Across voice coil	A1, A2 A3, A4	Adjust for maximum output.
2.	200MMF	High side to antenna terminal. Low side to chassis.	"	"	"	"	A5	Adjust for MINIMUM output.
3.	"	"	1500KC	"	1500KC	"	A6, A7 A8	Adjust for maximum output.
4.	"	"	600KC	"	600KC	"	A9	Adjust for maximum output while rocking tuning gang.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.1MFD	High side to pin 7	10.7MC (unmod.)	FM	88MC	DC probe to Point Ⓐ. Common to chassis.	A10, A11 A12, A13 A14	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to Point Ⓑ. Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FIG. 1

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	10.7MC (450KC swp.	FM	88MC	Vert. amp. to Point Ⓐ. Low side to chassis.	A10, A11 A12, A13, A14	Disconnect stabilizor capacitor C3. Adjust for maximum amplitude and symmetry as per fig. 1.
6.	"	"	"	"	"	Vert. amp. to Point Ⓑ. Low side to chassis.	A15	Reconnect capacitor C3. Adjust so that 10.7MC occurs at center of crossover lines as per fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

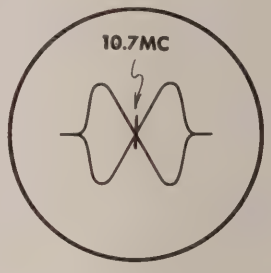
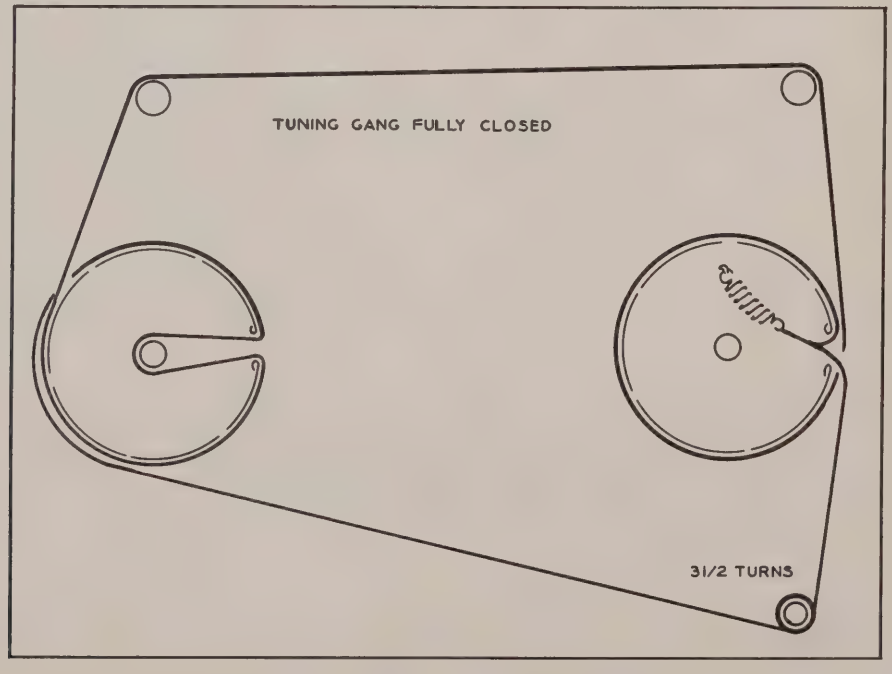


FIG. 2

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Direct	High side to FM antenna terminal. Low side to chassis.	90MC (unmod.)	"	90MC	DC probe to Point Ⓐ. Common to chassis.	A16, A17	Adjust for maximum deflection.
8.	"	"	106MC	"	106MC	"	A18, A19	"



DIAL CORD DRIVE

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PILOT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	FM RF Amplifier	6BA6	6BA6	7BK	
V2	FM Converter	6BE6	6BE6	7CH	
V3	1st. FM IF Amp.	6BA6	6BA6	7BK	
V4	2nd. FM IF Amp.	6BA6	6BA6	7BK	
V5	Ratio Detector	6AL5	6AL5	6BT	
V6	AM RF Amplifier	6BA6	6BA6	7BK	
V7	AM Converter	6BE6	6BE6	7CH	
V8	AM IF Amplifier	6BA6	6BA6	7BK	
V9	Det-AVC-AF Amp.	6AT6	6AT6	7BT	
V10	Rectifier	6X5GT	6X5GT	6S	

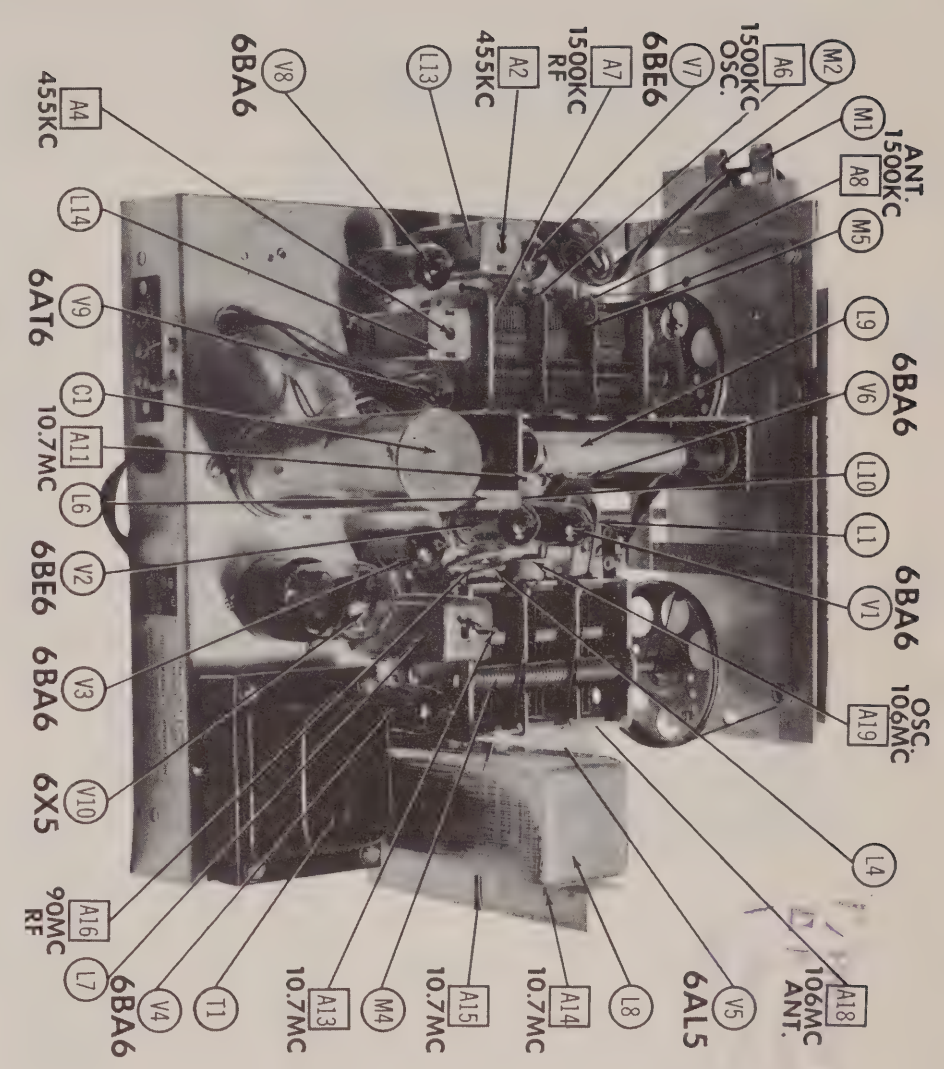
CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA: PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	475		AFH2-64		UP8445		TVL-2582	▲ Filter
B	80	475							● Filter
C2	8	150		PRS150/8		BR815		TVA-1405	Decoupling
C3	2	50		PRS150/4		BBR2-50		TVA-1301	Stabilizing Cap.
C4	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	FM RF Amp. Plate Dec.
C5	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	FM RF Amp. Screen
C6	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	FM RF Amp. Cathode
C7	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	FM RF Amp. Fil.
C8	50			SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	FM RF Coupling
C9	50			SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	FM Osc. Grid Cap.
C10	100						N220L-101		Fixed Padder
C11	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	FM Osc. Anode Bypass
C12	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	FM Conv. Plate Dec.
C13	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	1st. FM IF Amp. Grid
C14	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	1st. FM IF Amp. Plate
C15	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	1st. FM IF Amp. Screen
C16	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	2nd. FM IF Amp. Grid
C17	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	2nd. FM IF Amp. Plate
C18	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	2nd. FM IF Amp. Screen
C19	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	2nd. FM IF Amp. Fil.
C20	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	RF Bypass
C21	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode Load Cap.
C22	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode Load Cap.
C23	600				D6-601	1W5T6		MS-36	RF Bypass
C24	250	500		1468-00025	D6-251	5W5T25	GP2K-251	5GA-T25	De-emphasis †
C25	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AVC Filter
C26	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AM RF Amp. Screen
C27	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	RF Coupling
C28	20			SI20NP0	TCZ-20		NP0K-200		Fixed Trimmer
C29	1			1468-000001	TCZ-1		NP0K-010		AM RF Coupling
C30	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	AVC Filter
C31	50			SI-50	D6-500	TM5Q5	GP1K-500	5GA-Q5	AM Osc. Grid Cap.
C32	1000	500		1464-001		1R5D1		MS-21	Fixed Padder
C33	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AM Osc. Anode Bypass
C34	.05	200		P288-05	DF-503	PJ2S5		2TM-S5	AM Conv. Plate Dec.
C35	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AVC Filter
C36	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	AM IF Amp. Screen
C37	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	RF Bypass
C38	50			SI50	D6-500	5W5Q5	GP1K-500	5GA-Q5	AM IF Coupling
C39	250			SI250	D6-251	5W5T25	GP2K-251	5GA-T25	Diode RF Filter
C40	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode RF Filter
C41	300	500		1468-0003	D6-301	5W5T3	GP2K-301	MS-33	Tone Comp.
C42	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C43	.01	400		P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C44	.047	400		P488-047	DF-503	PTE4S47		4TM-S47	Audio Coupling
C45	30			SI30		5W5Q3	GP1K-300	MS-43	FM Ant. Line Isolation
C46	10000			BPD-01	DD-103	TM5S1	821-01	5HK-S1	Line Filter

† Value may be increased to obtain increased De-emphasis on some Models

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	PILOT PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R1A	250KΩ	½	36-39	Q13-130	AG-64-Z	B-51-S	Volume
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PILOT PART No.	IRC PART No.	
R2	68Ω	½			FM RF Amp. Cathode
R3	10KΩ	½		BTS-10K	FM RF Amp. Screen
R4	470Ω	½		BTS-470	FM RF Amp. Plate Decoupling
R5	27KΩ	½		BTS-27K	RF Osc. Grid
R6	5600Ω	1		BTA-5600	FM Osc. Anode
R7	470Ω	½		BTS-470	FM Conv. Plate Decoupling
R8	220KΩ	½		BTS-220K	1st. FM IF Amp. Grid
R9	10KΩ	½		BTS-10K	1st. FM IF Amp. Screen
R10	470Ω	½		BTS-470	1st. FM IF Amp. Plate Decoupling
R11	100KΩ	½		BTS-100K	2nd. FM IF Amp. Grid
R12	10KΩ	½		BTS-10K	2nd. FM IF Amp. Screen
R13	470Ω	½		BTS-470	2nd. FM IF Amp. Decoupling
R14	100KΩ	½		BTS-100K	De-emphasis
R15	15KΩ	½		BTS-15K	Ratio Det. Diode Load
R16	15KΩ	½		BTS-15K	Ratio Det. Diode Load
R17	2200Ω	½		BTS-2200	Balancing
R18	150KΩ	½		BTS-150K	AVC Network
R19	68Ω	½			AM RF Amp. Cathode
R20	10KΩ	½		BTS-10K	AM RF Amp. Screen
R21	150KΩ	½		BTS-150K	AVC Network
R22	22KΩ	½		BTS-22K	AM Osc. Grid
R23	5600Ω	1		BTA-5600	AM Osc. Anode
R24	4700Ω	1		BTA-4700	AM Conv. Plate Decoupling
R25	68Ω	½			AM IF Amp. Cathode
R26	10KΩ	½		BTS-10K	AM IF Amp. Screen
R27	2.2Meg	1		BTA-2.2Meg	AVC Network
R28	27KΩ	½		BTS-27K	Diode Filter
R29	220KΩ	½		BTS-220K	Diode Filter
R30	220KΩ	½		BTS-220K	Diode Load
R31	1Meg	½		BTS-1Meg	AVC Diode Load
R32	4.7Meg	½		BTS-4.7Meg	Tone Compensation
R33	1Meg	½		BTS-1Meg	Tone Compensation
R34	4.7Meg	½		BTS-4.7Meg	AF Amp. Grid
R35	100KΩ	½		BTS-100K	AF Amp. Plate
R36	27KΩ	½		BTS-27K	AF Amp. Plate Decoupling
R37	4000Ω	5	31-121	1 3/4A-4000	Bleeder - Wire Wound - See Note 1
R38	2000Ω	5	31-122	1 3/4A-2000	Bleeder - Wire Wound - See Note 2
R39	100Ω	2			Surge Limiter
R40	470Ω	1		BTA-470	Filter

Note 1. Some Models use a 6000Ω Resistor in this application
Note 2. Not used in all Models

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PILOT PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC	300VCT	6.3VAC		55-29	PM-8418① ②		
	ⓐ.27A	.045A	ⓐ2A					

①Drill new Mtg. Holes
② Add series Resistor to reduce plate voltage.

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	PILOT PART No.	MERIT PART No.	
L1	FM Ant. Coil	0Ω	0Ω	70-66		
L2	Fil. Choke	.1Ω		75-19		
L3	RF Choke	.1Ω		75-19		
L4	FM RF Coil	0Ω		71-28		
L5	FM Osc. Coil	0Ω		72-57		
L6	1st. FM IF	.3Ω	.3Ω	273-119	FM-251	
L7	2nd. FM IF	.3Ω	.3Ω	273-119	FM-251	
L8	Ratio Det.	.5Ω	.2Ω	279-34		Tapⓐ.3Ω
L9	AM Loop Ant.	0Ω	.1Ω	270-51		
L10	IF Trap	30Ω		79-68		
L11	AM RF Coil	70Ω	2.8Ω	71-29		
L12	AM Osc. Coil	4.6Ω		72-70		Tapⓐ.3Ω
L13	1st. AM IF	24Ω	24Ω	273-146	BC-352	
L14	2nd. AM IF	8.4Ω	8.4Ω	273-129	BC-353	
L15	RF Choke	.1Ω		75-19		
L16	RF Choke	.1Ω		75-19		

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PILOT PART No.		
M1	Bayonet	6-8	.25	Brown			Type #47 (FM)
M2	Bayonet	6-8	.25	Brown			Type #47 (AM)

MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M3	Switch	100-76	Function Selector
M4	FM Tuning Cap.	26-42	
M5	AM Tuning Cap.	26-47	(35-522MMF, 34-497MMF, 18-177MMF)
A19	Trimmer	N-300	FM Osc. Adj. (3-13MMF)

RCA VICTOR MODELS 1X51, 1X52, 1X53, 1X54, 1X55, 1X56, 1X57, (Ch. RC1104, A, B)

RCA VICTOR MODELS 1X51, 1X52, 1X53, 1X54, 1X55, 1X56, 1X57, (Ch. RC1104, A, B)

RCA Victor Model 1X51

TRADE NAME	RCA Victor Models 1X51, 1X52, 1X53, 1X54, 1X55, 1X56, 1X57 (Ch. RC1104, A, B)
MANUFACTURER	RCA Victor Div., Radio Corp. of America, Camden, N.J.
TYPE SET	AC/DC Operated AM Superheterodyne Receiver
TUBES (FIVE)	Types 12SA7 Conv., 12BA6 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC/DC — RATING .25 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and chassis.
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to pin 1 (grid) of 12BA6 (V2). Low side to chassis.	455KC (400~Mod.)	Point of non-interference near 1600KC	Across voice coil	A1, A2	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	"	High side to stator plates of rear section of tuning gang.	"	"	"	A3, A4	"
3.		Loop	1620KC	Tuning gang fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4.	"	"	1400KC	Tune to 1400KC signal.	"	A6	"
5.		"	600KC	Tune to 600KC Signal.	"	A7	Rock tuning gang while adjusting A7 for maximum output. Repeat steps 3, 4 and 5.

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PARTS LIST AND DESCRIPTIONS

RCA VICTOR MODEL 1X51

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: RCA VICTOR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12SA7	12SA7	8R	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det. AVC-AF Amp.	12SQ7	12SQ7	8Q	
V4	Audio Output	50L6GT	50L6GT	7AC	
V5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: RCA VICTOR PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150	76718	PRS150/50-30		BRD5315A		TVA-2450	Filter (Green)
B	50	150							Filter (Red)
C2	68	500	39624	1469-00007		5R5Q5		MS-47	Osc. Grid Cap.
C3	.047	400	73553	P488-047	DF-503	PTE4S47		4TM-S47	AVC Filter
C4	150	500	39632	1469-00015	D6-150	5W5T15	GP2K-151	1FM-315	Diode RF Filter
C5	.01	200	73561	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C6	330	500	72571	1468-00035	D6-331		GP2K-331	1FM-335	AF Amp. Plate Bypass
C7	.0027	400	73599	P688-003	D6-272	PTE6D3	GP2-333-272	6TM-D3	Audio Coupling
C8	.027	400	73554	P488-03		PTE6S3		6TM-S3	Audio Output Plate
C9	.047	400	73553	P488-047	DF-503	PTE4S47		4TM-S47	Rectifier Plate
C10	.1	400	73551	489ZGXY-1		PJ4P1		4TM-P1	Line Isolation

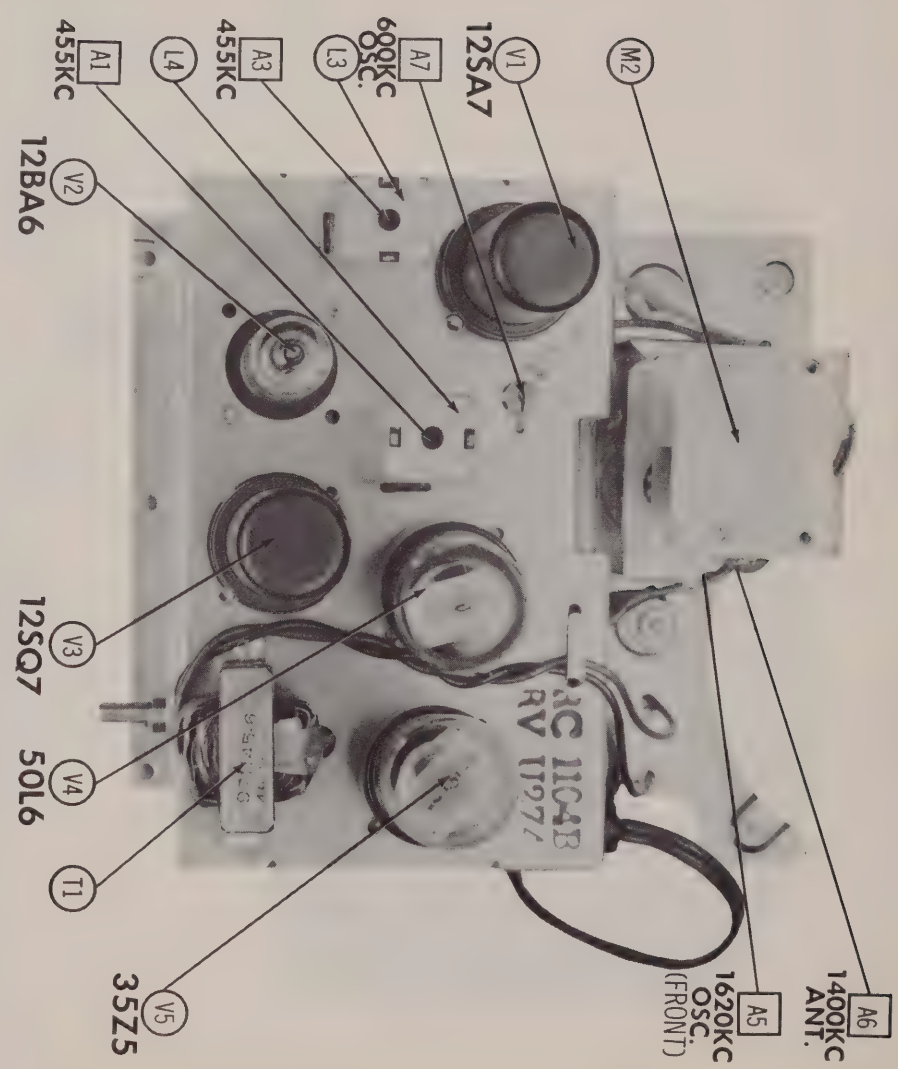
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA VICTOR PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	74285	Q13-137	AG-63-Z	B-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: RCA VICTOR PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	504332		Osc. Grid
R3	100Ω	½	504110		Parasitic Suppressor
R4	100Ω	½	504110	BTS-100	IF Amp. Cathode
R5	3.3Meg	½	504533	BTS-3.3Meg	AVC Network
R6	47KΩ	½	504347	BTS-47K	Diode Filter
R7	10Meg	½	504610	BTS-10Meg	AF Amp. Grid
R8	220KΩ	½	504422	BTS-220K	AF Amp. Plate
R9	470KΩ	½	504447	BTS-470K	Output Grid
R10	150Ω	½	503115	BTS-150	Output Cathode
R11	1200Ω	1	513212	BTA-1200	Filter
R12	220KΩ	½	504422	BTS-220K	Line Isolation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		RCA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.3KΩ	3.2Ω	250Ω Tap② 20Ω	.7Ω	76714	A-3332	A-3025	RO-2 ①	① Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	RCA VICTOR PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.2Ω	76391	ST-113 Mod. P4-X	4A07	
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	RCA VICTOR PART No.	MERIT PART No.	
L1	Loop Ant.	2Ω		76712		Chassis RC1104A uses part #76730
L2	Osc. Coil	.6Ω	4.7Ω	74448	*BC-381	*New Mounting
L3	Input IF	17.5Ω	17.5Ω	75486	BC-352	
L4	Output IF	15Ω	15Ω	75487		

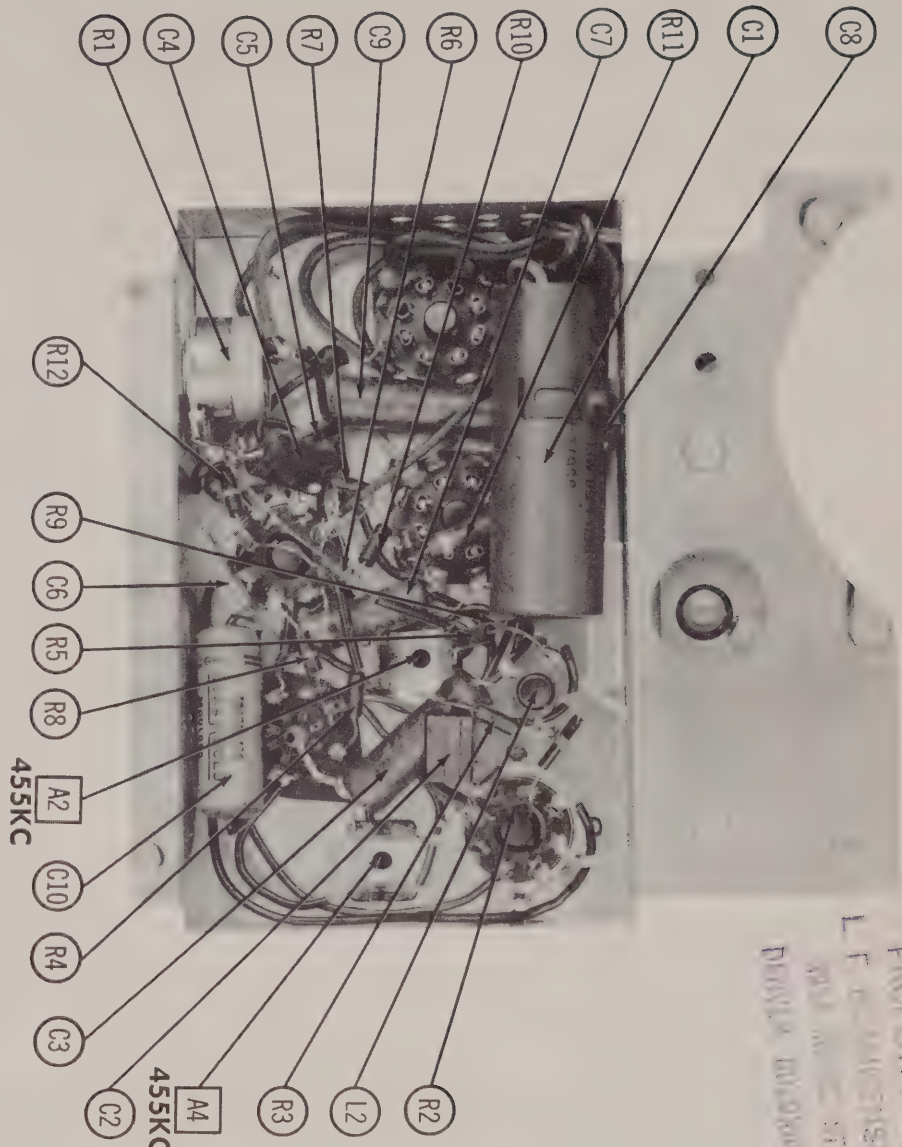
DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					RCA VICTOR PART No.		
M1	Bayonet	6-8	.15	Brown	31480		Type #47

MISCELLANEOUS

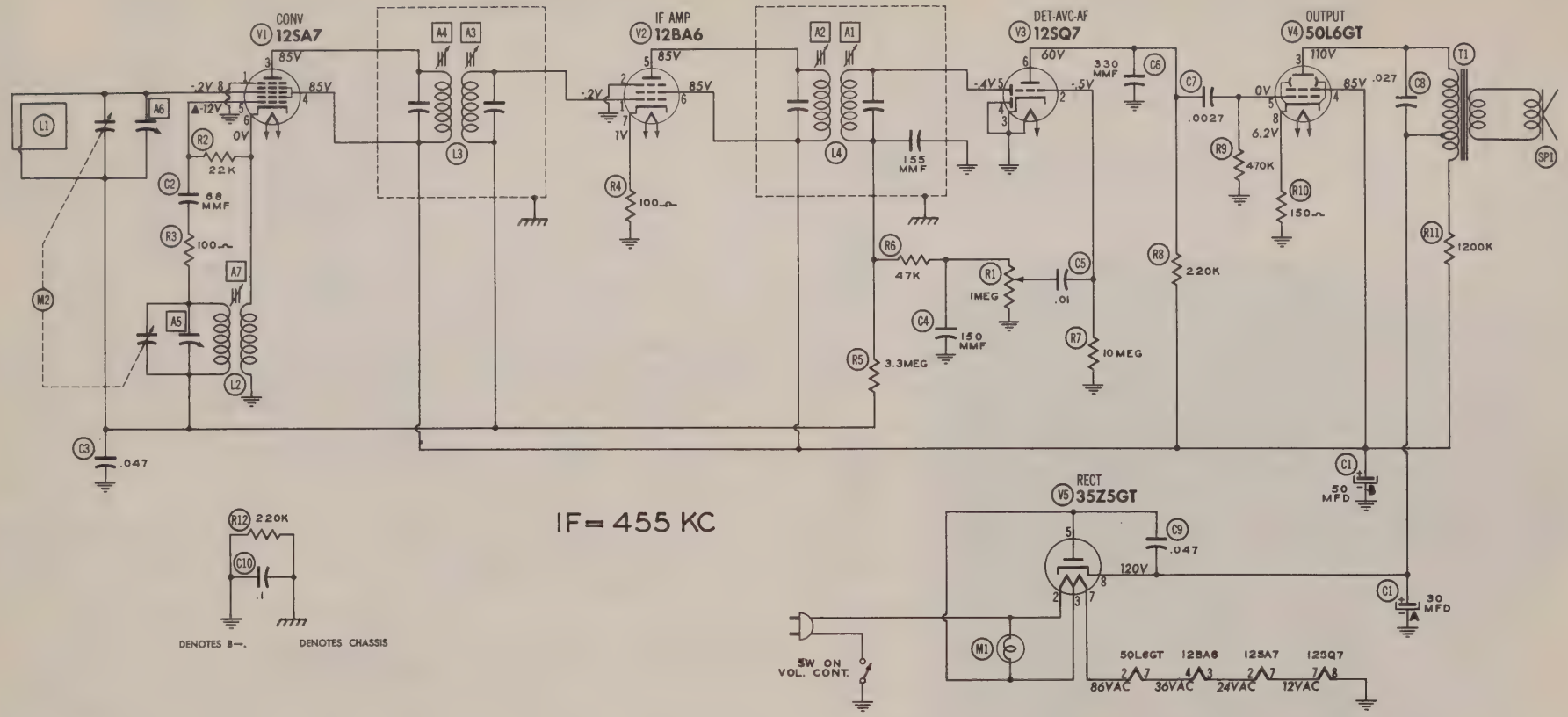
ITEM No.	PART NAME	RCA VICTOR PART No.	NOTES
M2	2 gang var. cap.	76715	(25-437MMF, 15-152MMF)
	Cabinet	Y2373	Model 1X51 (Maroon)
	Cabinet	Y2375	Model 1X52 (Ivory)
	Cabinet	Y2377	Model 1X53 (Green)
	Cabinet	Y2378	Model 1X54 (Tan)
	Cabinet	Y2379	Model 1X55 (Blue)
	Cabinet	Y2380	Model 1X56 (Red)
	Cabinet	Y2376	Model 1X57 (White)
	Dial scale	76720	
	Knob	76719	Model 1X51 - Volume
	Knob	74667	Model 1X52 - Volume
	Knob	76758	Model 1X53 - Volume
	Knob	76759	Model 1X54 - Volume
	Knob	76760	Model 1X55 - Volume
	Knob	70761	Model 1X56 - Volume
	Knob	74007	Model 1X57 - Volume
	Knob	76713	All Models - Tuning

CHASSIS—BOTTOM VIEW



PROPERTY OF
RCA VICTOR DIVISION

RCA VICTOR MODEL 1X51



IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7	220KΩ	24Ω	†1.2KΩ	†1.2KΩ	22KΩ	.7Ω	12Ω	4.3Meg
V 2	12BA6	4.3Meg	0Ω	24Ω	36Ω	†1.2KΩ	†1.2KΩ	100Ω	
V 3	12SQ7	220KΩ	10Meg	0Ω	0Ω	1Meg	†220KΩ	12Ω	0Ω
V 4	50L6GT	INF	86Ω	†250Ω	†1.2KΩ	470KΩ	†20Ω	36Ω	150Ω
V 5	35Z5GT	INF	121Ω	103Ω	INF	103Ω	INF	86Ω	60KΩ

†MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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172-8

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

STEWART-WARNER MODELS
9202-A, B, C, DA, DB, DD, DDA, E, F, FA

L. F. I.
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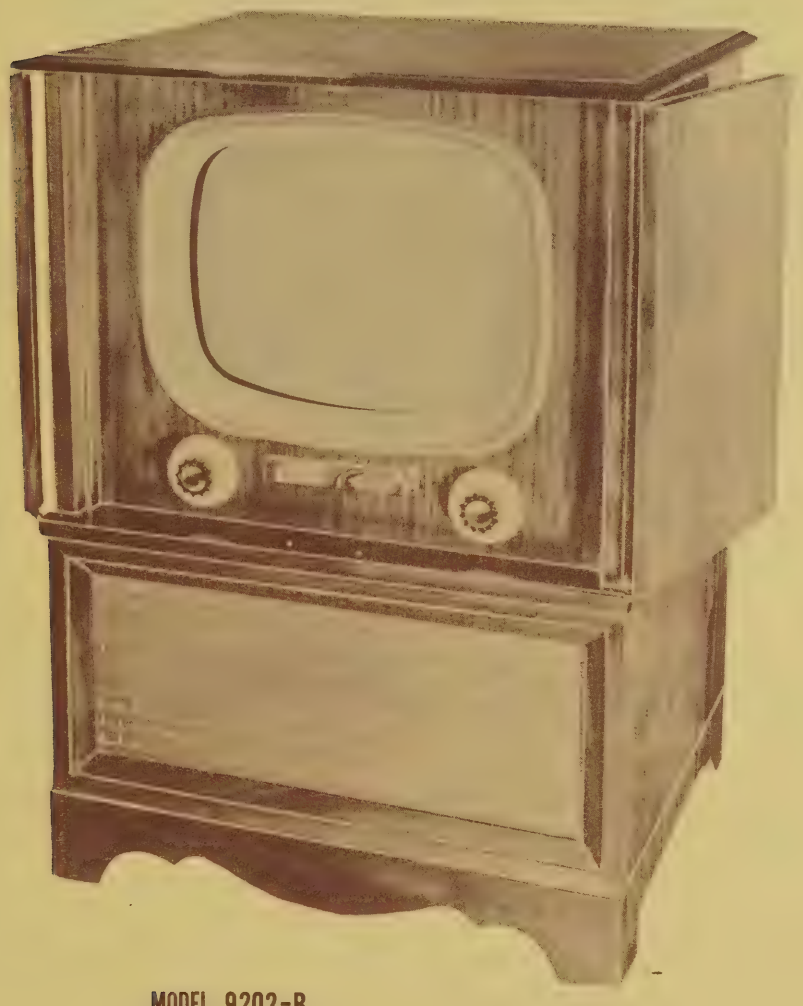

MODEL 9202-B

STEWART-WARNER MODELS
9202-A, B, C, DA, DB, DD, DDA, E, F, FA

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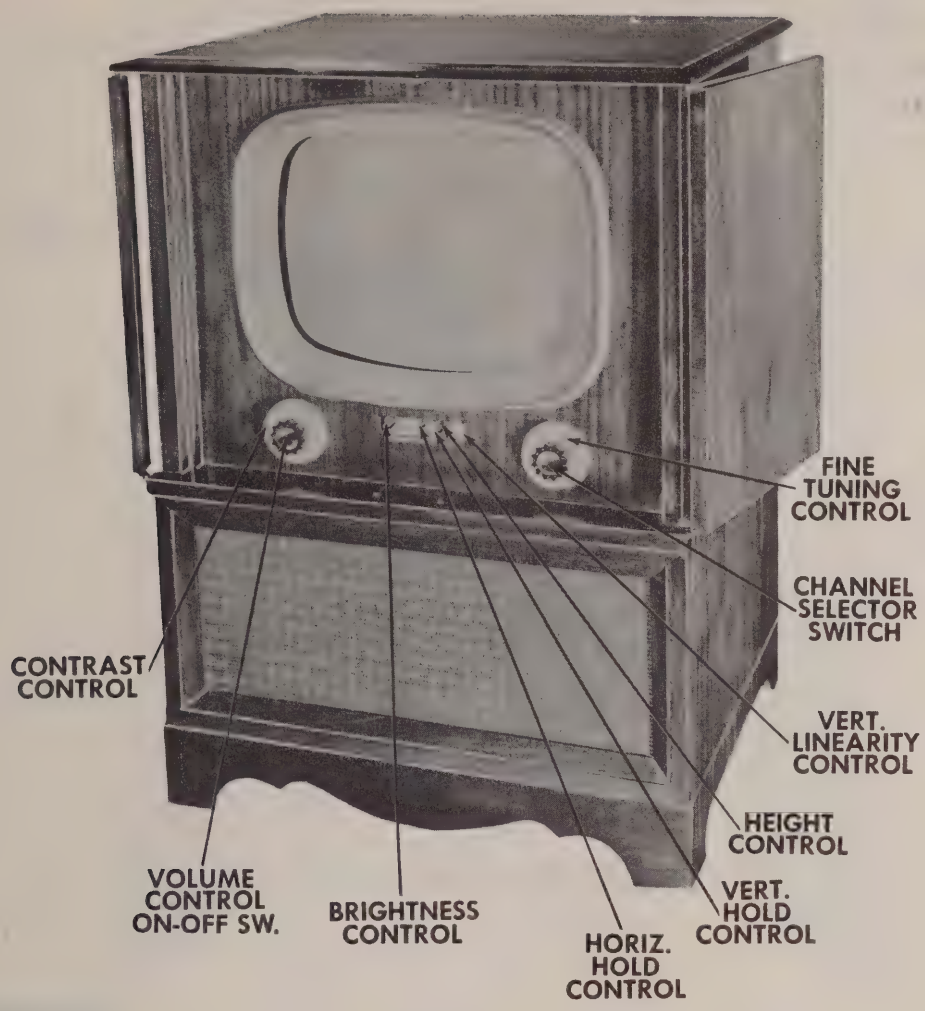
DATE 7-52 SET 172 FOLDER 9



STEWART-WARNER MODELS
9202-A, B, C, DA, DB, DD, DDA, E, F, FA

STEWART-WARNER 9202-B

TRADE NAME	Stewart-Warner Models 9202-A, B, C, DA, DB, DD, DDA, E, F, FA
MANUFACTURER	Stewart-Warner Elect., Div. of Stewart-Warner Corp., 1300 N. Kostner Ave., Chicago 15, Ill.
TYPE SET	Television Receiver
TUBES	Nineteen
POWER SUPPLY	110-120 Volts AC - 60 Cycle — RATING 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 Thru 13

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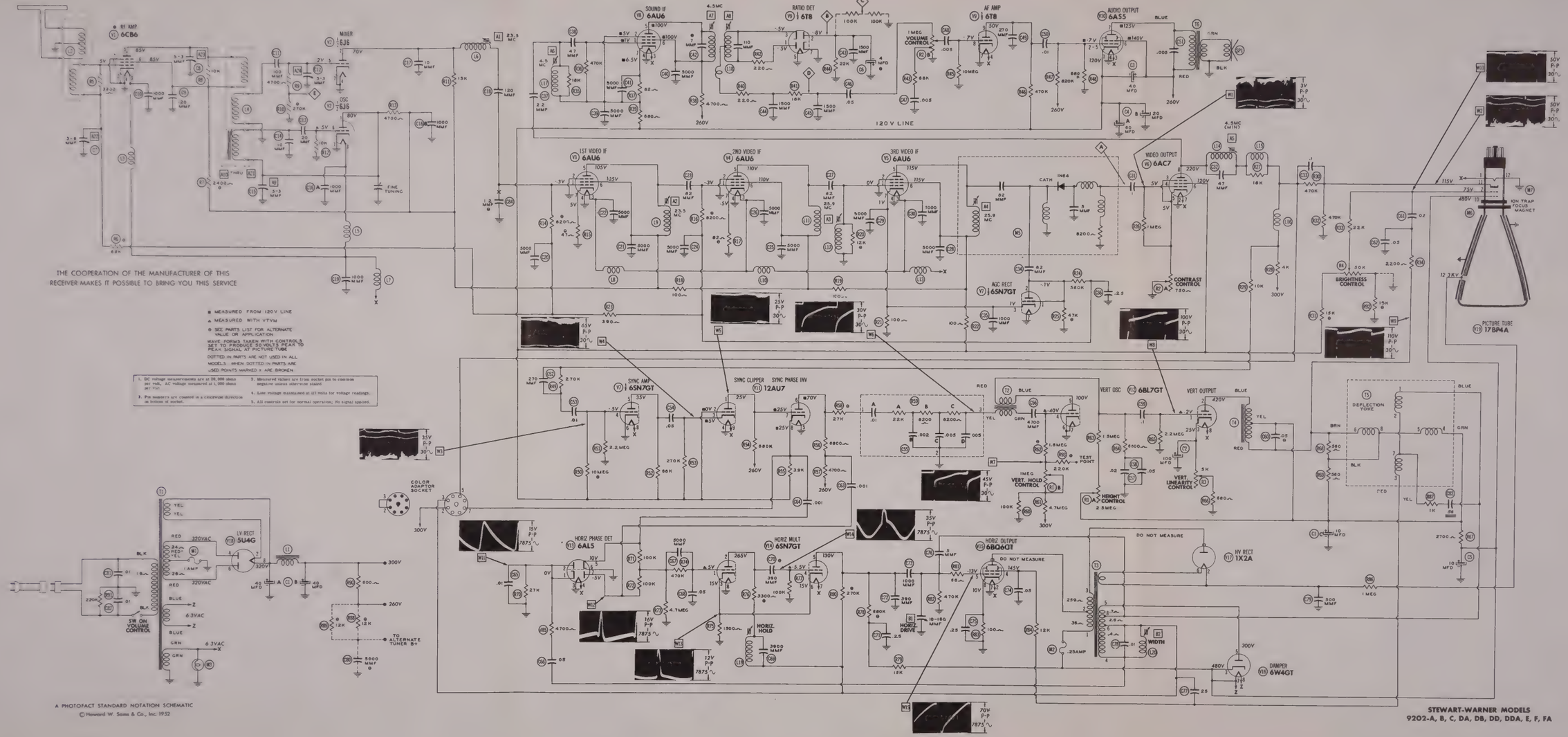
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
■ MEASURED FROM 120 V LINE
▲ MEASURED WITH VTVM
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
1. DC voltage measurements are at 20,000 ohms per volt. AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.
RF AMP V1 6CB6
MIXER V2 6J6
OSC V3 6J6
SOUND IF V8 6AU6
RATIO DET V9 6T8
AF AMP V9 6T8
AUDIO OUTPUT V10 6AS5
1ST VIDEO IF V5 6AU6
2ND VIDEO IF V5 6AU6
3RD VIDEO IF V5 6AU6
VIDEO OUTPUT V6 6AC7
AGC RECT V7 6SN7GT
SYNC AMP V7 6SN7GT
SYNC CLIPPER SYNC PHASE INV V11 12AU7
VERT OSC V12 6BL7GT
VERT OUTPUT
HORIZ PHASE DET V13 6AL5
HORIZ MULT V14 6SN7GT
HORIZ OUTPUT V13 6BQ6GT
LV RECT V10 5U4G
HV RECT V17 1X2A
DAMPER V18 6W4GT
PICTURE TUBE V19 17BP4A
ION TRAP FOCUS MAGNET
DEFLECTION YOKE
BRIGHTNESS CONTROL
CONTRAST CONTROL
VOLUME CONTROL
HEIGHT CONTROL
VERT. HOLD CONTROL
VERT. LINEARITY CONTROL
HORIZ. DRIVE
HORIZ. HOLD
WIDTH
FINE TUNING
SW ON VOLUME CONTROL
COLOR ADAPTOR SOCKET
TO ALTERNATE TUNER B+
120 V LINE
DO NOT MEASURE
TEST POINT
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STEWART-WARNER MODELS 9202-A, B, C, DA, DB, DD, DDA, E, F, FA

STEWART-WARNER
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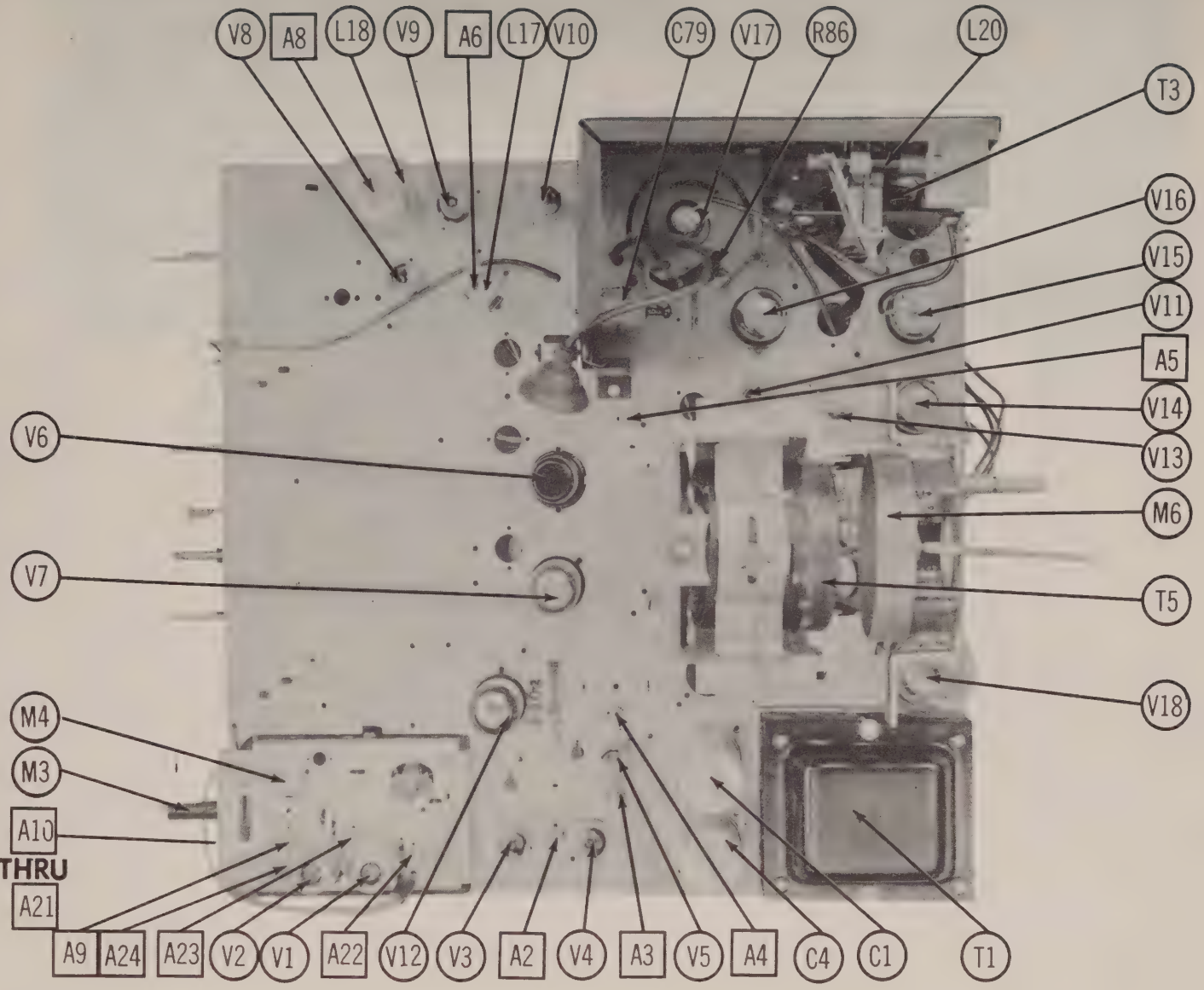
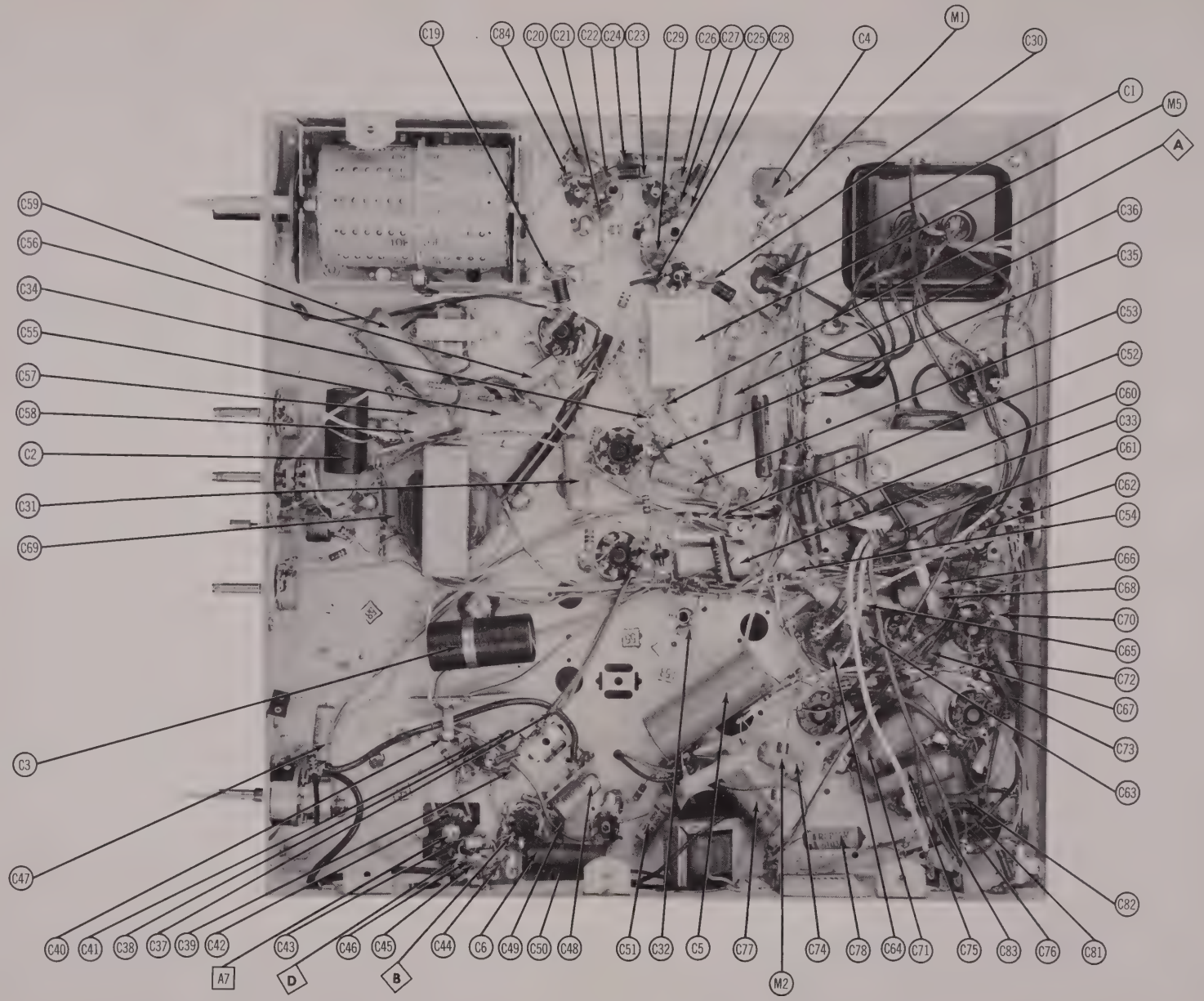
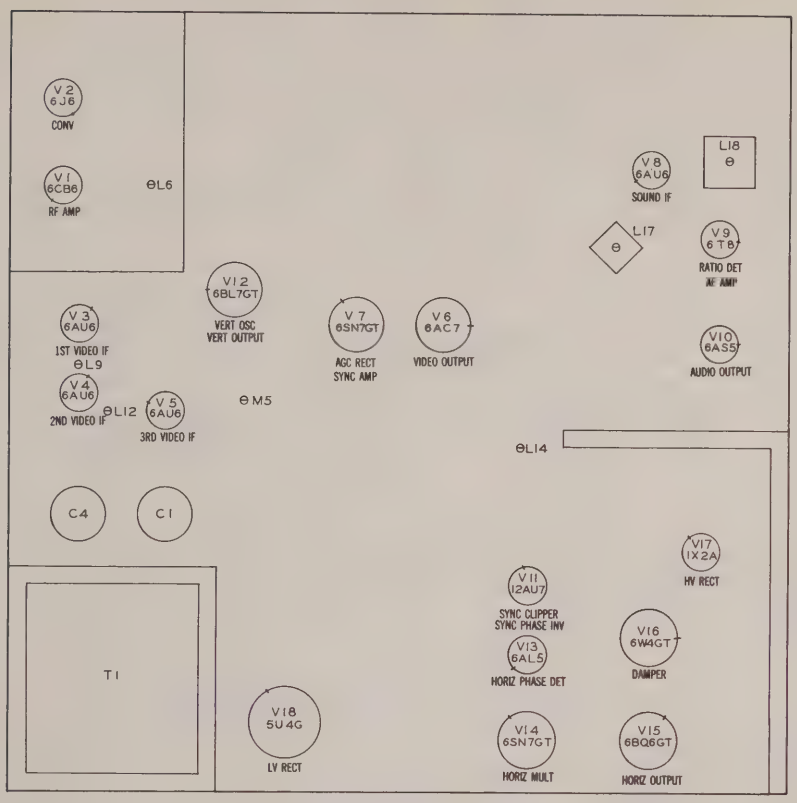


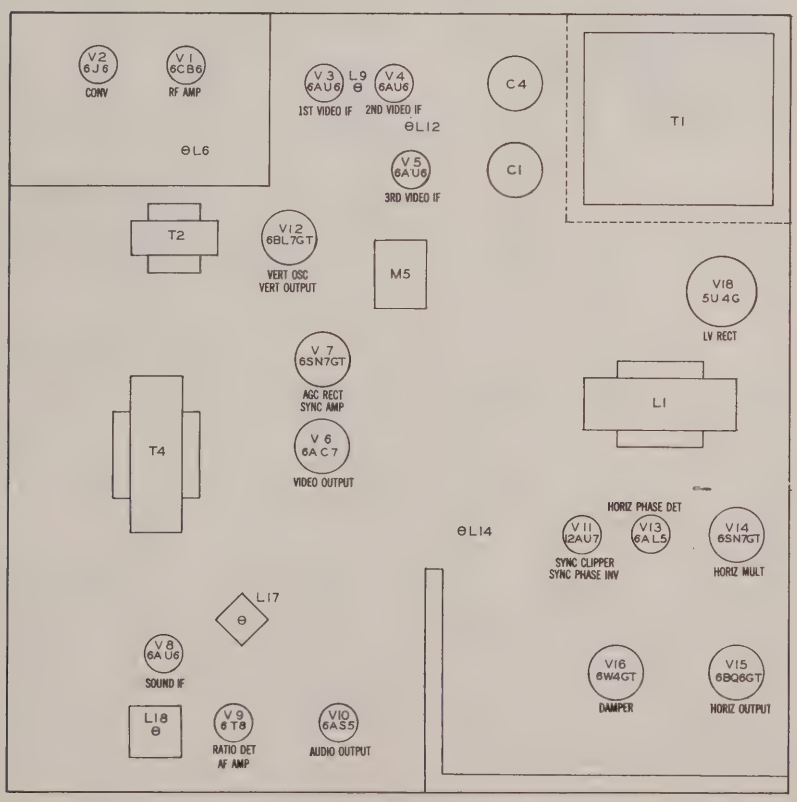
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removal of the horizontal multi-vibrator tube, V14, from its socket.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C36. Connect the positive lead to chassis. Remove the converter tube (V2) from its socket, and replace with a dummy 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possiblity of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	23.5MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1, A2	Adjust for maximum deflection
2.	"	"	25.9MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25MC (10MC swp.)	22.25MC 26.7MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve as per Fig. 1. If necessary readjust A1 thru A4 for proper response.

4.5MC TRAP ADJUSTMENT

Remove the third video amplifier tube (V5) from its socket during this adjustment only.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD	High side to Point (A) Low side to chassis.	4.5MC (unmod.)	Any	DC probe thru detector (Fig. 2) to pin 11 of picture tube. Common to chassis.	A5	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to point (A) Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B) Common to chassis.	A6, A7	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (D) Common to point (C)	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to Point (A) Low side to chassis.	4.5MC (450KC swp.	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A6, A7	Disconnect stabilizor capacitor C6. Adjust for maximum amplitude and symmetry as per Fig. 3.
6.	"	"	"	"	"	Vert. amp. to Point (D) Low side to chassis.	A8	Reconnect capacitor C6. Adjust so 4.5MC occurs at center of crossover lines as per Fig. 4. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

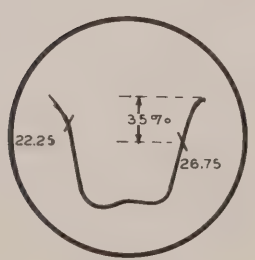


FIG. 1

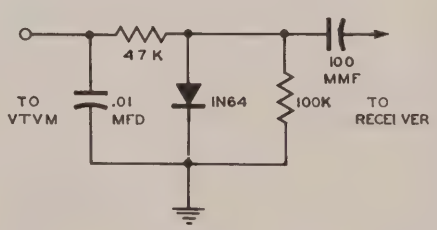


FIG. 2

FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A9. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A9 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Preset A9 to approximately 3/8" above top surface of RF tuner unit.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point (A) Low side to chassis.	A10	Adjust to place sound & video marker on response curve as per fig. 5.
8.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"	A11	"
			201MC (10MC Swp)	199.25MC 203.75MC	11		A12	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A13	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A14	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A15	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A16	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A17	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A18	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A19	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A20	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A21	

RF AMPLIFIER AND MIXER ALIGNMENT

Connect 3 Volt bias battery as in Video IF Alignment.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	Two120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC swp.)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to Point (E) Low side to chassis.	A22, A23 A24	Adjust for response curve similar to Fig. 6.
10.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	"		Check all channels for response similar to Fig. 6. If markers fall below 70% on any channel make slight adjustments of A22, A23, A24 with channel switch set for that channel. Recheck all channels to see that none have been seriously affected.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

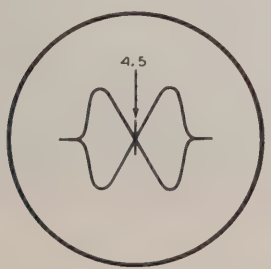


FIG.4

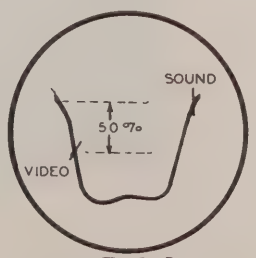


FIG.5

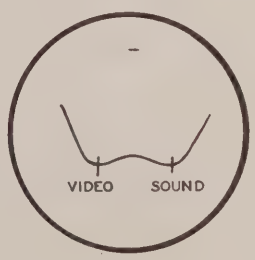
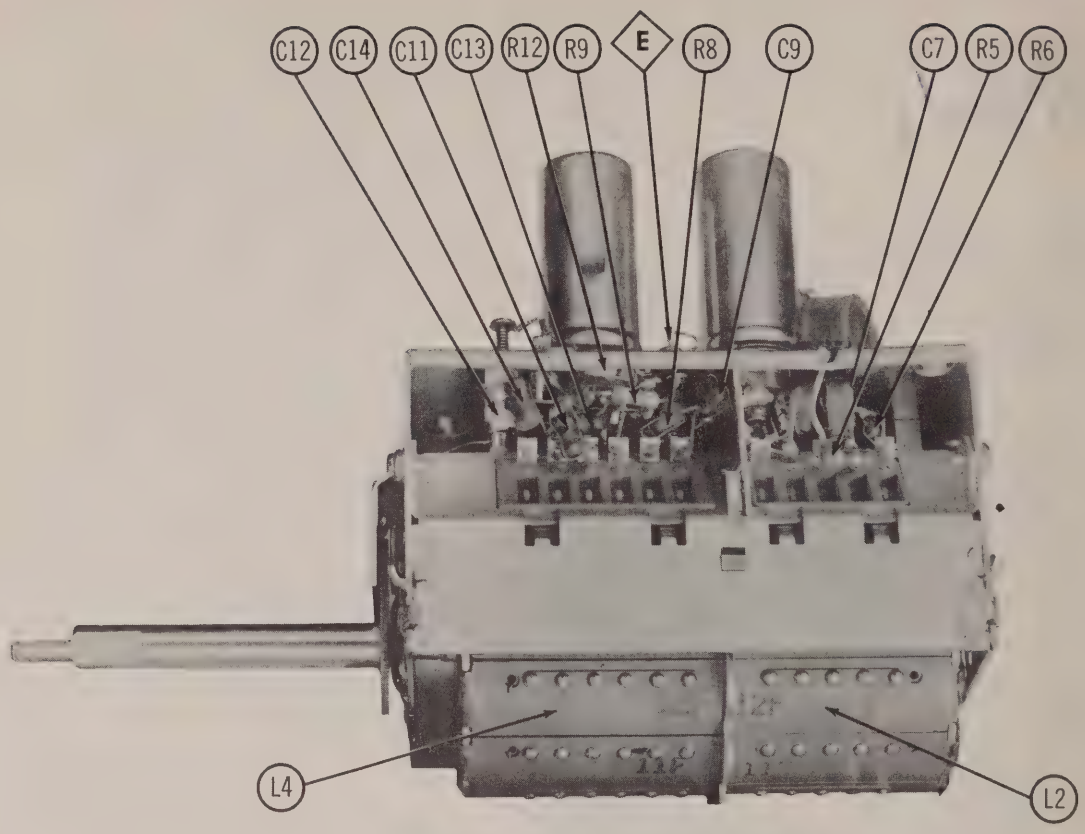


FIG.6

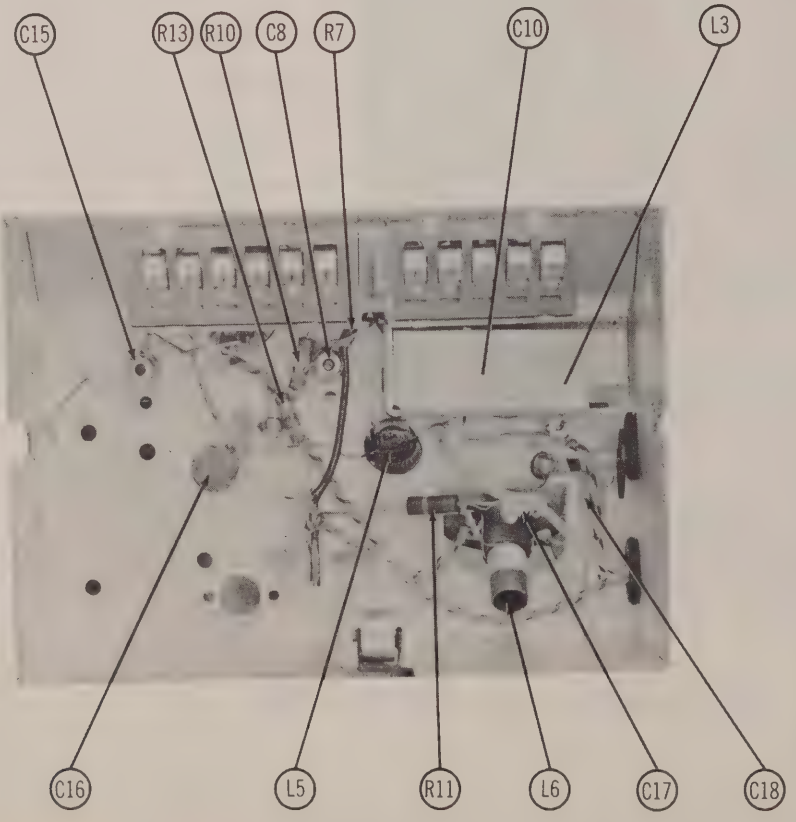
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	675KΩ	0Ω	.1Ω	0Ω	■2.7KΩ	■2.7KΩ	0Ω		
V 2	6J6	■5KΩ	■15KΩ	.1Ω	0Ω	270KΩ	10KΩ	0Ω		
V 3	6AU6	615KΩ	0Ω	.1Ω	0Ω	■300Ω	■300Ω	47Ω		
V 4	6AU6	615KΩ	0Ω	.1Ω	0Ω	■200Ω	■200Ω	82Ω		
V 5	6AU6	.1Ω	0Ω	.1Ω	0Ω	■100Ω	■100Ω	100Ω		
V 6	6AC7	0Ω	0Ω	300Ω	1Meg	300Ω	■0Ω	.1Ω	†4KΩ	
V 7	6SN7GT	47KΩ	47KΩ	100Ω	2.2Meg	■68KΩ	0Ω	0Ω	.1Ω	
V 8	6AU6	■470KΩ	■680Ω	.1Ω	0Ω	†5.4KΩ	†5.4KΩ	■760Ω		
V 9	6T8	INF	22KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	■470KΩ
V 10	6AS5	50KΩ	450KΩ	.1Ω	0Ω	450KΩ	†670Ω	†1.1KΩ		
V 11	12AU7	†680KΩ	■0Ω	■270KΩ	0Ω	0Ω	†12KΩ	†680KΩ	■3.9KΩ	.1Ω
V 12	6BL7GT	2.2Meg	#3.5KΩ	1.6KΩ	2.5Meg	#2.5Meg	0Ω	0Ω	.1Ω	
V 13	6AL5	27KΩ	27KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 14	6SN7GT	5.1Meg	†3.4KΩ	1.5KΩ	100KΩ	†270KΩ	1.5KΩ	.1Ω	0Ω	
V 15	6BQ6GT	INF	.1Ω	INF	†12KΩ	470KΩ	470KΩ	0Ω	100Ω	TOP CAP #36Ω
V 16	6W4GT	INF	INF	250KΩ	INF	†76Ω	#0Ω	#0Ω	#.2Ω	
V 17	IX2A	PINS 1 THRU 9 HAVE INF RESISTANCE								TOP CAP #295Ω
V 18	5U4G	#0Ω	90KΩ	INF	24Ω	.1Ω	26Ω	INF	90KΩ	
V 19	17BP4A	.1Ω	42KΩ	PIN 10 #0Ω	PIN 11 230KΩ	PIN 12 0Ω				

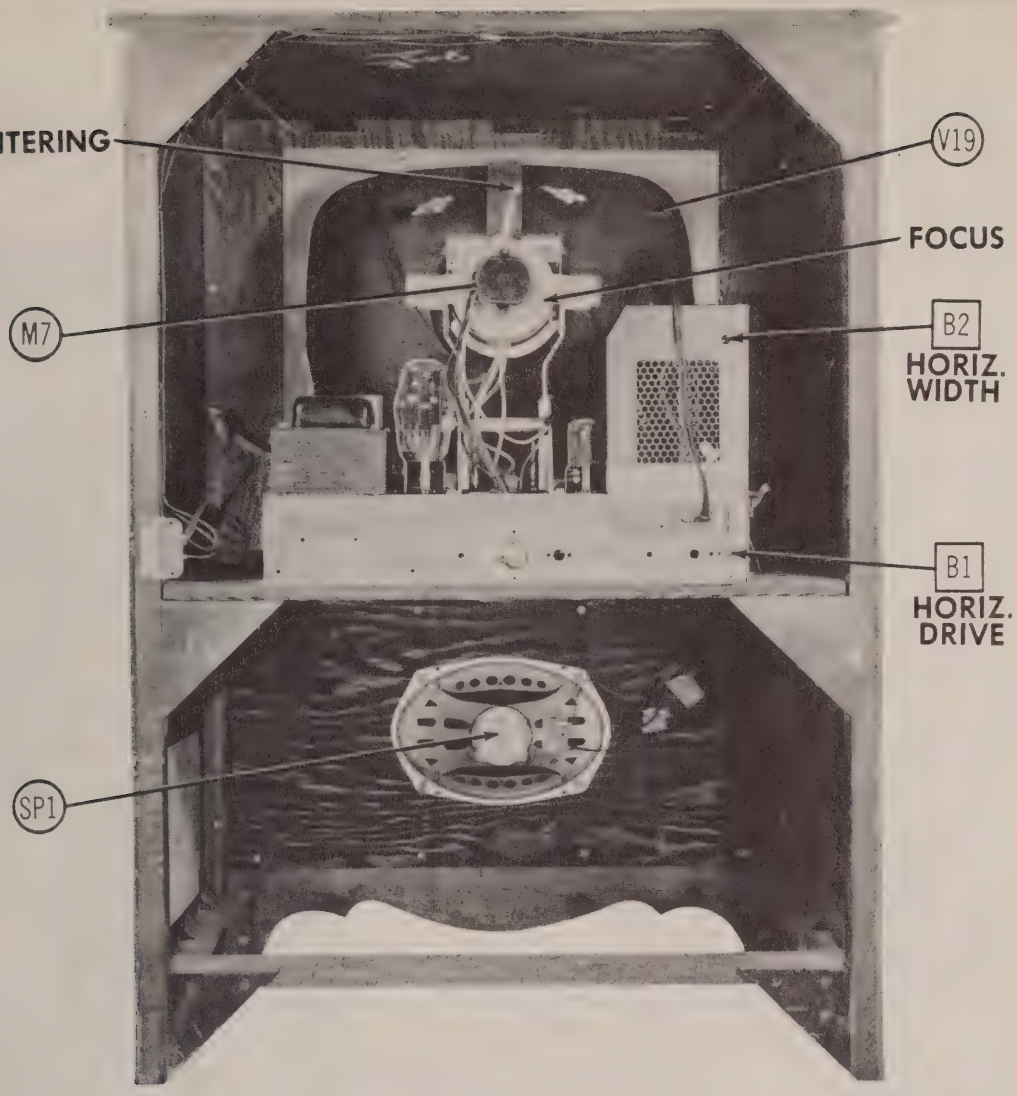
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V18
# MEASURED FROM PIN 3 OF V16
■ MEASURED FROM 120VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

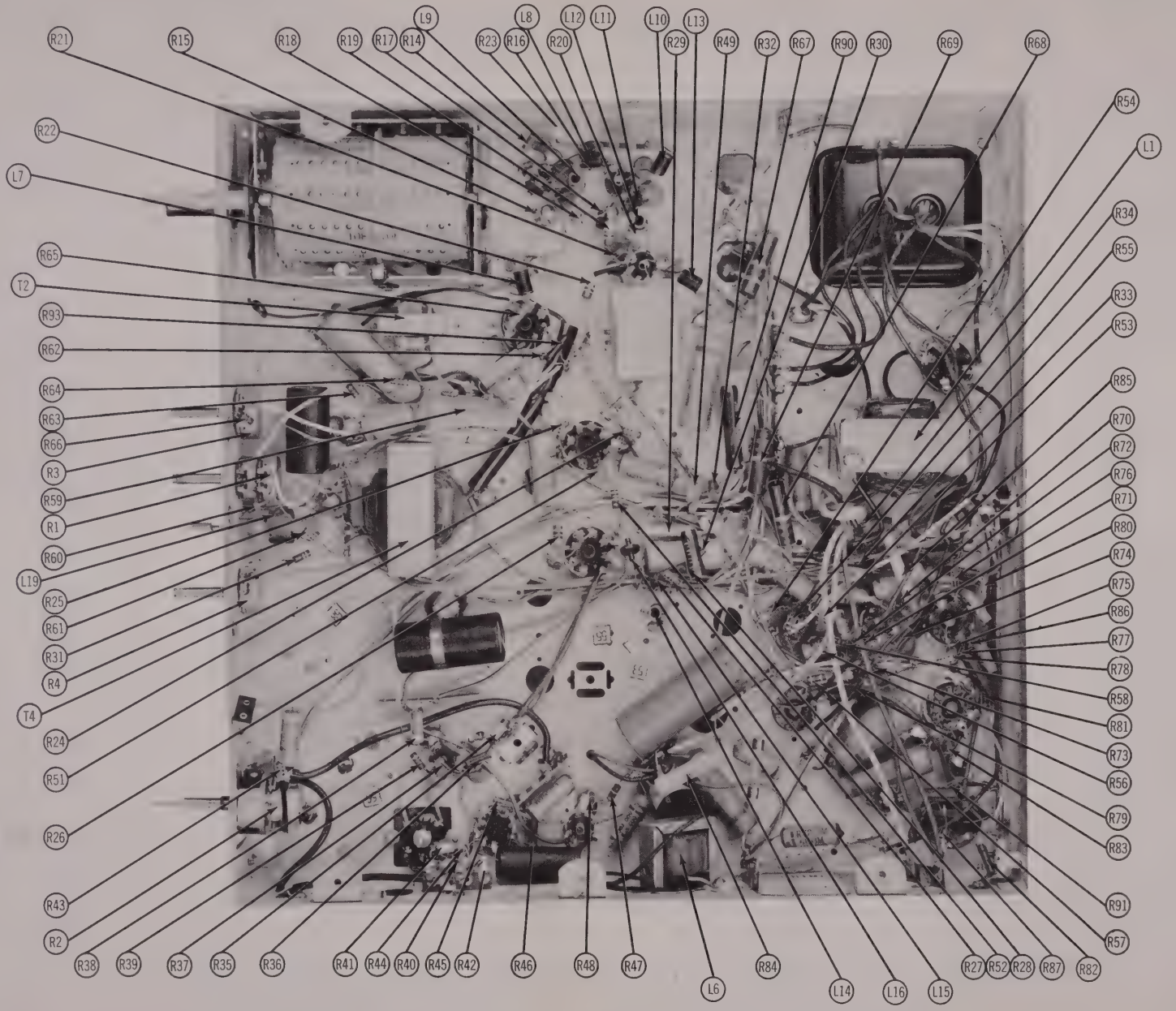
HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Set the horizontal hold at the middle of its range through which the picture remains in sync. Turn the horizontal drive trimmer (B1) counter clockwise until the picture starts to compress at the center, then clockwise to where the compression just disappears. Adjust the width slug (B2) for a picture slightly wider than enough to fill the picture mask.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 push on type control knobs from front panel.
2. Remove 4 wood screws . Remove rear cover.
3. Disconnect built-in antenna and speaker leads from speaker.
4. Remove 4 nuts holding speaker. Remove speaker.
5. Remove 2 wood screws. Remove antenna bracket.
6. Remove 6 chassis bolts. Remove chassis.

NOTE: FOR PI CTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: STEWART-WARNER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CH	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	Some models use 6CB6 (7CH)
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	Some models use 6CB6 (7CH)
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	Some models use 6CB6 (7CH)
V6	Video Output	6AC7	6AC7	8N	
V7	AGC Rectifier - Sync. Amplifier	6SN7GT	6SN7GT	8BD	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6AS5	6AS5	7CV	
V11	Sync. Clipper - Sync. Phase Inv.	12AU7	12AU7	9A	
V12	Vert. Oscillator - Vert. Output	6BL7GT	6BL7GT	8BD	
V13	Horiz. Phase Det.	6AL5	6AL5	6BT	
V14	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rectifier	1X2A	1X2A	9Y	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stewart-Warner PART No.	SYLVANIA PART No.		RTMA BASE TYPE	NOTES
V19	17BP4A	17BP4A		12D	① Circuit changes necessary
		17BP4 ①		12D	
		17HP4 ①		12C	
		17RP4 ①		12C	
		17JP4		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	509001	AFH3-43		UPT44145		TVL-3785	▲ Filter
B	40	450							■ Filter
C	10	450							▲ Vert. Output Decoupling
C2	100	50	508682	PRS50/100		BRH501		TVA-1310	Vert. Output Cathode
C3	40	300	160095	PRS450/40		BR4035		TVA-1611	Decoupling
C4A	60	450	508073	AFH2-60		UPT6245		TVL-1850	▲ Decoupling
B	20	450							■ Decoupling
C5	10	600	508680	PRS700/10		BRHV610			Decoupling
C6	4	150	502497	PRS150/4		BR415		TVA-1402	Stabilizing Cap. ¶
C7	3-9		509064		829-19				Variable Trimmer
C8	.5-3		507698		829-3				Variable Trimmer
C9	120		513439	SI120	D6-121	TM5T12	GP2K-121	5GA-T12	RF Amp. Decoupling
C10	1000		513009	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C11	100		513440	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C12	.5-3		507968		829-3				Variable Trimmer
C13	20		513441	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C14	10		513442	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C15	.5-3		509063		829-3				Variable Trimmer
C16A	1000		508576	BPD-2X001	DD-2-102	TM5DD1	812-001	5HK-2D1	Conv. Fil. Bypass
B	1000								RF Bypass
C17	10		513444	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C18	120		512542	SI120	D6-121	TM5T12	GP2K-121	5GA-T12	IF Coupling
C19	1000		513009	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Fil. Bypass
C20	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C21	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C22	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil.
C23	82		513016	SI82			GP1K-820		IF Coupling
C24	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C25	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Dec.
C26	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Fil.
C27	82		513016	SI82			GP1K-820		IF Coupling
C28	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C29	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Cathode
C30	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Fil.
C31	.1	200	512033	P288-1	DF-104	PJ2P1		2TM-P1	Video Coupling
C32	47		512438	SI47NP0	TCZ-47		NP0K-470	5TCC-Q47	Fixed Trimmer
C33	.1	400	512035	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C34	82		513016	SI82			GP1K-820		IF Coupling
C35	1000		513009	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	AGC Rect. Cathode
C36	.25	200	512045	P488-25		PJ2P25		2TM-P25	AGC Filter
C37	2.2		513001		TCZ-2.2		NP0K-2R2		Sound IF Coupling
C38	47		513002	SI47	D6-470	5R5Q5	GP1K-470	5GA-Q47	Sound IF Coupling
C39	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Grid Dec.
C40	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Dec.
C41	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Cathode
C42	7						NP0K-070		Fixed Trimmer ††
C43	1500		513010	SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	Diode Load Cap.
C44	1500		513010	SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	RF Bypass
C45	1500		513010	SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	De-Emphasis
C46	.05	200	512027	P288-05	DF-503	PJ2S5		2TM-S5	Audio Coupling
C47	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C48	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C49	270		513006	SI270	D6-270	5R5T3	GP2K-271	5GA-T27	AF Amp. Plate Bypass
C50	.01	400	512011	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C51	.005	600	512007	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C52	270		513006	SI270	D6-270	5R5T3	GP2K-271	5GA-T27	Sync. Coupling
C53	.01	600	512013	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C54	.05	400	512029	P488-05	DF-503	PTE4S5		4TM-S5	Sync. Coupling

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	Stewart Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55A	.01			P688-01		PTE6S1	GP2-333-103		Vert. Sync. Coupling
B	.002		♦508062	P688-002	♦PC-100	PTE6D2	GP2-333-202	♦10IC1	Vert. Integrator Net.
C	.005			P688-005	♦DD-103	PTE6D5	GP2-333-502	♦5HK-S1	Vert. Integrator Net.
D	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C56	4700	500	512533	1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C57	.02	600	512019	P688-03	DF-203	PTE6S2		6TM-S2	Vert. Discharge
C58	.05	600	512308	P688-05	DF-503	PTE6S5		6TM-S5	Vert. Discharge
C59	.1	600	512037	P688-1	DF-1[illegible]	PTE6P1		6TM-P1	Vert. Sweep Coupling
C60	.05	200	512027	P288-05	DF-503	PJ2S5		2TM-S5	Fixed Trimmer ††
C61	.02	600	512019	P688-02	DF-203	PTE6S2		6TM-S2	Vert. Sweep Coupling
C62	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Integrator Net.
C63	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C64	.001	600	512001	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C65	.01	300	512009	P488-01	DF-104	PTE6S1	GP2-333-103	4TM-S1	Voltage Divider
C66	.05	600	512031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Feedback
C67	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Horiz. AFC Coupling
C68	.05	200	512027	P288-05	DF-503	PJ2S5		2TM-S5	Horiz. AFC Filter
C69	3900	500	512540	1464-004		1DR5D4			Fixed Trimmer
C70	390	500	512535	1469-0004		SR5T4		MS-34	Horiz. MV Feedback ††
C71	.25	600	512049	684-25		PTE6P25		6TM-P25	Horiz. MV Dec.
C72	390	500	512535	1469-0004		SR5T4		MS-34	Horiz. Discharge
C73	1000	500	512515	1468-001	D6-102	1W5D1	GP2L-102	1FM-21	Horiz. Sweep Coupling
C74	.05	600	513031	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C75	.25	200	512045	P488-25		PJ2P25		2TM-P25	Horiz. Output Cathode
C76	5	1500	513026						Horiz. Feedback
C77	.25	200	512045	P488-25		PJ2P25		2TM-P25	Horiz. Sweep Coupling
C78	.01	600	512013	P688-01		PTE6S1		6TM-S1	Fixed Trimmer
C79	500	20000	508888	HV20C	TV3-502	MM-C20T5			HV Filter
C80	5000		513013	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass *
C81	.01	400	512255	489ZGXY-01		PJ4S1		4TM-S1	Line Filter
C82	.01	400	512255	489ZGXY-01		PJ4S1		4TM-S1	Line Filter
C83	56	1500	513027						Horiz. Damping
C84	1.2						NP0K-1R2		Neutralizing Cap. **

¶ Some models use 10MFD in this application (Part #505174)
†† Some models use 10MMF in this application (Part # 509706)
♦ Items C55A, C55B, C55C, C55D, R59A, R59B, R59C are combined in one unit.
§ Install DD-103 in series with PC-100 Input Lead.
† Install 5HK-S1 in series with 10IC1 Input Lead.
†§ Some models use .25MFD in this application (Part #512045)
¶¶ Some models use 470MMF in this application (Part #512545)
* Used only in models employing RF Tuner Part #502306
** Not used in all models

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Stewart Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2.5Meg	½	[illegible]	QJ-223 *	RTV-313		Height Control - Panel
B	1Meg	½					Vert. Hold Control - Rear
R2A	750Ω	2	509314	QJ-286 * *	RTV-309		Contrast Control - Wire Wound - Panel
B	1Meg	½					Volume Control & SW - Tapped @ 250KΩ Rear
R3A	5000Ω	½	508891	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Attach to R3A per instructions
R4A	50KΩ	½	[illegible]	Q11-123	AG-44-S	AN-31	Brightness Control
B	Shaft		Not Req.	Not Req.	RS-2	AK-4	Attach to R4A per instructions

* CONCENTRIKIT EQUIVALENT - Kit K-2, BASE ELEMENTS & SHAFTS B11-239 & P1-112 (Panel) B11-137 & R1-115 (Rear)
* * CONCENTRIKIT EQUIVALENT - Kit K-3 BASE ELEMENTS & SHAFTS W17-105 & P3-106 (Panel) B13-137X & R1-202 (Rear) SWITCH 76-1

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	Stewart Warner PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R5	3900Ω	½	510147	BTS-3900	Antenna Coil Shunt
R6	68KΩ 20%	½			RF Amp. Grid - See Note 1
R7	2400Ω	½		BTS-2200	RF Amp. Decoupling - See Note 2
R8	10KΩ 20%	½	510155	BTS-10K	RF Coil Shunt
R9	4700Ω 20%	½	510149	BTS-4700	Mixer Grid
R10	270KΩ	½		BTS-270K	Mixer Grid - See Note 3
R11	15KΩ 20%	½	510158	BTS-15K	Mixer Plate
R12	10KΩ	½	510155	BTS-10K	Oscillator Grid
R13	4700Ω	½	510149	BTS-4700	Oscillator Plate
R14	8200Ω 5%	½	510756		1st. Video IF Grid - See Note 4
R15	47Ω	½	510112		1st. Video IF Cathode - See Note 5
R16	8200Ω 5%	½	510756		2nd. Video IF Grid - See Note 6
R17	82Ω	½	510117	BTS-82	2nd. Video IF Cathode - See Note 7
R18	100Ω	½	510119	BTS-100	Decoupling
R19	100Ω	½	510119	BTS-100	Decoupling
R20	12KΩ 5%	½	510723		3rd. Video IF Coil Shunt - See Note 6&8
R21	100Ω	½	510119	BTS-100	3rd. Video IF Cathode
R22	100Ω	½	510119	BTS-100	Decoupling
R23	390Ω	½	510129	BTS-390	AGC Network
R24	560KΩ	½	510188	BTS-560K	AGC Network
R25	47KΩ	½	510166	BTS-47K	AGC Diode Load - See Note 9
R26	1Meg 20%	½	510191	BTS-1Meg	Video Output Grid
R27	18KΩ 5%	½	510745	BTS-18K 5%	Peaking Coil Shunt
R28	4000Ω	5	510753	1 3/4A-4000	Video Output Plate - Wire Wound
R29	10KΩ	½	510154	BTS-10K	Isolation
R30	470KΩ	½	510184	BTS-470K	Video Peaking
R31	15KΩ	½	510157	BTS-15K	Voltage Divider - See Note 1
R32	470KΩ	½	510184	BTS-470K	Picture Tube Cathode
R33	22KΩ	½	510160	BTS-22K	Picture Tube Grid
R34	2200Ω	½	510142	BTS-2200	Integrator Network
R35	18KΩ	½	510159	BTS-18K	Sound IF Coil Shunt
R36	470KΩ	½	510184	BTS-470K	Sound IF Grid
R37	82Ω	½	510117	BTS-82	Sound IF Cathode
R38	4700Ω 20%	1	510249	BTA-4700	Sound IF Decoupling
R39	680Ω	½	510134	BTS-680	Sound IF Decoupling

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	Stewart Warner PART No.	IRC PART No.	IDENTIFICATION CODES
R40	220Ω 20%	½	510124	BTS-220	Balancing
R41	18KΩ	½	510159	BTS-18K	De-emphasis
R42	220Ω 20%	½	510124	BTS-220	Balancing
R43	68KΩ	½	510170	BTS-68K	Tone Compensation
R44	22KΩ	½	510160	BTS-22K	Ratio Detector Diode Load
R45	10Meg 20%	½	510197	BTS-10Meg	AF Amp. Grid
R46	470KΩ	½	510184	BTS-470K	AF Amp. Plate
R47	820KΩ 5%	½	510747	BTS-820K 5%	Voltage Divider
R48	680KΩ 5%	½	510746	BTS-680K 5%	AF Output Grid
R49	270KΩ	½	510180	BTS-270K	Isolation
R50	10Meg	½	510197	BTS-10Meg	Voltage Divider - See Note 10
R51	2.2Meg 20%	½	510193	BTS-2.2Meg	Sync Amp. Grid
R52	68KΩ	½	510169	BTS-68K	Sync Amp. Plate
R53	270KΩ	½	510180	BTS-270K	Sync Clipper Cathode
R54	680KΩ	½	510187	BTS-680K	Sync Clipper Plate
R553	3900Ω 5%	½	510748	BTS-3900 5%	Sync Ph. Inv. Cathode
R56	6800Ω	½	510151	BTS-6800	Sync Ph. Inv. Plate
R57	4700Ω 5%	½	510750	BTS-4700 5%	Sync Ph. Inv. Plate
R58	27KΩ	½	510162	BTS-27K	Integrator Network - See Note 10
R59A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	♦ 508062	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R60	100KΩ	½	510751	BTS-100K	Voltage Divider
R61	4.7Meg	½	510195	BTS-4.7Meg	Voltage Divider
R62	1.8Meg 5%	½	510743	BTS-1.8Meg 5%	Vertical Oscillator Grid - See Note 11
R63	1.5Meg	½	510767	BTS-1.5Meg	Vertical Oscillator Plate
R64	6800Ω	½	510151	BTS-6800	Vertical Peaking
R65	2.2Meg 20%	½	510193	BTS-2.2 Meg	Vertical Output Grid
R66	680Ω	½	510134	BTS-680	Vertical Output Cathode
R67	2700Ω	1	510344	BTB-2700	Decoupling
R68	560Ω	2		BTB-560	Vertical Damping
R69	560Ω	2		BTB-560	Vertical Damping
R70	27KΩ	½	510162	BTS-27K	Horiz. AFC Diode Load
R71	100KΩ 5%	½	510751	BTS-100K 5%	Horiz. AFC Diode Load
R72	100KΩ 5%	½	510751	BTS-100K 5%	Horiz. AFC Diode Load
R73	4.7Meg 20%	½	510195	BTS-4.7Meg	Horiz. AFC Diode Load
R74	470KΩ	½	510184	BTS-470K	Horiz. AFC Filter
R75	1500Ω	½	510139	BTS-1500	Horiz. MV Cathode
R76	3300Ω	½	510145	BTS-3300	Horiz. MV Plate - See Note 12
R77	100KΩ	½	510172	BTS-100K	Horiz. MV Grid
R78	680KΩ	½	510187	BTS-680K	Horiz. MV Plate - See Note 13
R79	15KΩ	1	510357	BTB-15K	Horiz. MV Plate Decoupling
R80	270KΩ	½	510180	BTS-270K	Voltage Divider - See Note 10
R81	68Ω 20%	½	510116		Parasitic Suppressor
R82	470KΩ	½	510184	BTS-470K	Horiz. Output Grid.
R83	100Ω	1	510218	BTA-100	Horiz. Output Cathode
R84	12KΩ	5	510758	1 3/4A-12K	Horiz. Output Screen - Wire Wound
R85	4700Ω	1	510248	BTA-4700	Horiz. AFC Feedback
R86	1Meg	2	510390		H.V. Filter
R87	1000Ω	½	510137	BTS-1000	Horiz. Damping
R88	12KΩ	2	510356	BTB-12K	Voltage Divider - See Note 10
R89	12KΩ	2	510356	BTB-12K	Voltage Divider - See Note 10
R90	600Ω	10	510741	1 3/4A-600	Filter - Wire Wound
R91	220KΩ 20%	½	510179	BTS-220K	Line Isolation
R92	15KΩ	½	510157	BTS-15K	Voltage Divider - See Note 10
R93	220KΩ	½		BTS-220K	Series Test Point - See Note 10

Note 1. Some Models may use a 47KΩ Resistor in this application
Note 2. Some Models may use a 2200Ω Resistor in this application
Note 3. Some Models may use a 220KΩ Resistor in this application
Note 4. Some Models may use a 12KΩ Resistor in this application
Note 5. Some Models may use a 68Ω Resistor in this application
Note 6. Some Models may use a 10KΩ Resistor in this application
Note 7. Some Models may use a 47Ω Resistor in this application
Note 8. Some Models may use a 5600Ω Resistor in this application
Note 9. Some Models may use a 8200Ω Resistor in this application
Note 10. Not used in all Models
Note 11. Some Models may use a 2 Meg Resistor in this application
Note 12. Some Models may use a 3900Ω Resistor in this application
Note 13. Some Models may use a 330KΩ Resistor in this application
♦ Items C55A, C55B, C55C, C55D, R59A, R59B, and R59C are combined in one unit.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ⑤ 1.6A	640VCT ⑤ .210ADC	⑤ 3A	6.3VAC ② 7.4A SEC. 4 6.3VAC ⑤ 1.2A	509380	P-8315 P-6134 ②	P-3067 ①	TP-370 ①

① Add series resistor to reduce high voltage.
② Mount Beneath chassis, and use for Sec. #4

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	153Ω	940Ω	508078	A-8111 ③	A-3000 ③ HVO-7 MWC-1 ⑤	TB0-1 ④	Vert. Oscillator Trans.
T3	295Ω Tapped ⑤ 36Ω	3.7Ω Tapped ⑤ .4Ω & 3Ω SEC. 2 0Ω	509384				Horiz. Output Trans.
T4	800Ω Tapped ⑤ 9Ω		509375	A-8123 ③	A-3037	TSO-5	Vert. Output Trans.
T5A	16Ω		509704	DY-8	MDF-70		Horiz. Deflection Coils
B	48Ω						Vert. Deflection Coils

③ Drill one new mounting hole.
④ Mount on top of chassis.
⑤ Replace width coil with MWC-1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	5KΩ	3.5Ω	450Ω	.9Ω	509376	A-3877 ③	A-2930	RO-8 ③	③ Drill one new mounting hole

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	Stewart-Warner PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	P. M.	3.5Ω	508174 ⑥ 509398 ⑦	8T-810 Mod. P68-V	68A2	⑥ Used in Models 9202-A, B, C, E, F, & FA ⑦ 8" speaker used in Models 9202-DA, DB, DD & DDA
	CONE DIA.	V. C. DIA.				
SP1B	6" X 9"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (@ CURRENT 1000 ↓)	Stewart-Warner PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.210ADC	73Ω	2.9 Hy.	508341	C-2325	C-2991 ③	TR-3300 ③	① Drill one new Mounting Hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	Stewart-Warner PART No.	MERIT PART No.	NOTES
L2	Ant. Coil	0Ω		507952		Channel 2
L3	Fil. Choke	0Ω		507970		
L4	RF, Mixer Grid and Osc. Coils	0Ω		507972		Channel 2
L5	Fil. Choke	0Ω		507971		
L6	1st. Video IF	.8Ω		509081		Includes Slug Part #509062
L7	Fil. Choke	0Ω		507584		
L8	Fil. Choke	0Ω		507584		
L9	2nd. Video IF	.1Ω		507343	TV-112	Less Slug Part #507357
L10	Fil. Choke	0Ω		507584		
L11	RF Choke	2.8Ω		507367		
L12	3rd. Video IF	.1Ω		507343	TV-112	Less Slug Part #507357
L13	Fil. Choke	0Ω		507584		
L14	4.5MC Trap	1.6Ω		509603	TV-151	Includes Slug Part #507357
L15	Peaking Coil	10Ω		509341	TV-185	
L16	Peaking Coil	14Ω		509342	TV-188	
L17	Sound IF	1.3Ω		509378		
L18	Ratio Det.	5.6Ω	.1Ω	507321	*TV-110	Tertiary winding .6Ω Part #509706 is used when letter "A" is included in series designation at rear of chassis.
L19	Horiz. Osc.	82Ω		508967	TV-163	Includes Slug Part #508963
L20	Width Coil	1.4Ω		509361	MWC-2	Includes Slug Part #507429

* Drill new mounting holes.

FUSES

ITEM No.	TYPE	RATING	Stewart-Warner PART No. FUSE	Stewart-Warner PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG Pigtail	1A. 250V.	509517		318001		GJV1	
M2	GJV	1/4 A. 250V.	508063		318.250 (3AG-P/T)		GJV 1/4	

DIAL LIGHTS

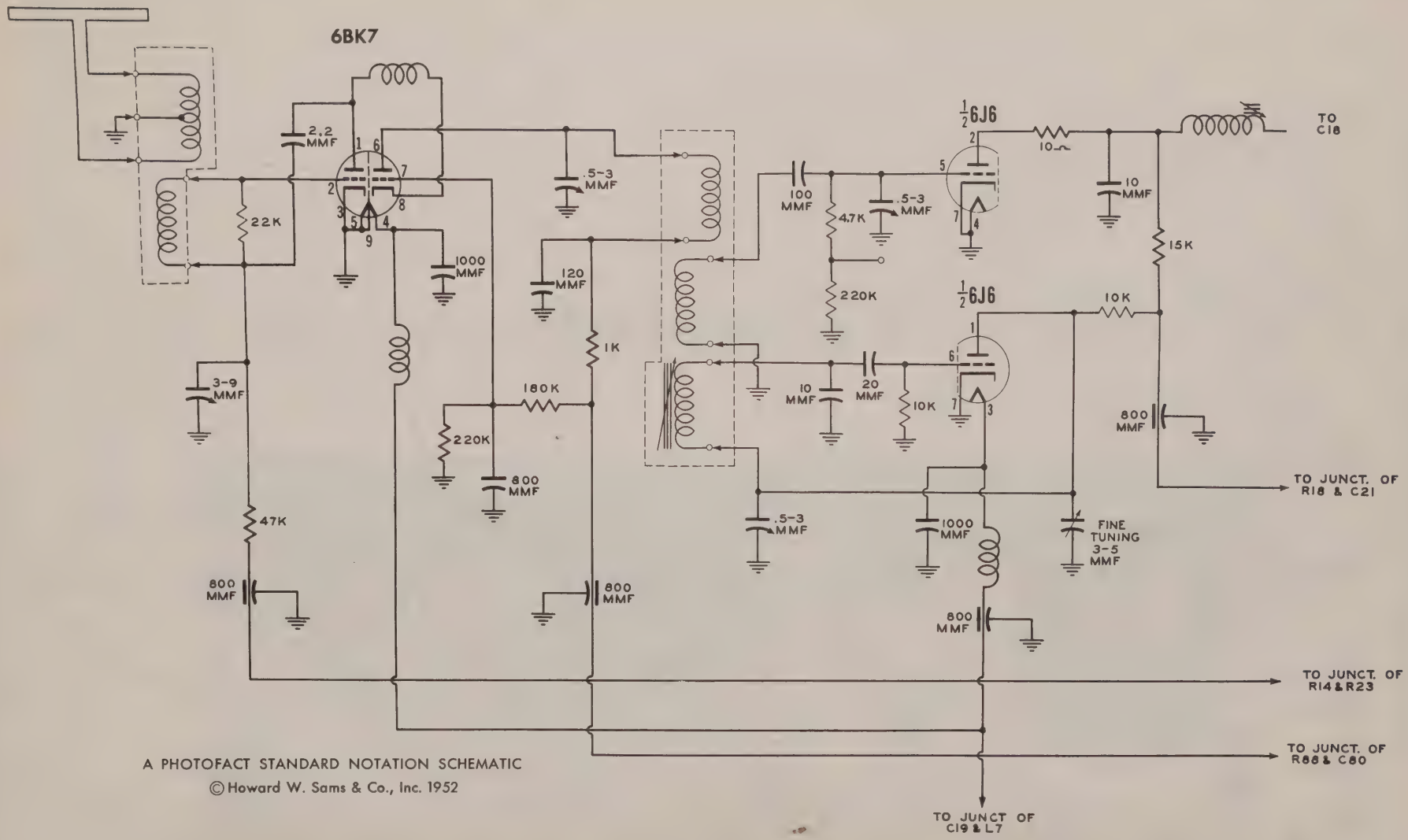
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	Stewart Warner PART No.	NOTES
M3	Bayonet	6-8	.15	Brown	118921	Type #47

MISCELLANEOUS

ITEM No.	PART NAME	Stewart Warner PART No.	NOTES
M4A	RF Tuner	508890	Complete with tubes
B	RF Tuner	520247	Complete with tubes (Alternate)
C	RF Tuner	520306	Complete with tubes (Alternate)
M5	4th Video IF	509613	Less Slug (Slug for coil Part No. 507357)
	Capacitor	513016	62MMF
	RF Choke	507367	
	Crystal	509388	1N64
	Capacitor	513432	5MMF
	RF Choke	509340	
	Peaking Coil	509342	
	Resistor	510153	8.2KΩ ½ Watt. 10%
M6	Focus Magnet	509644	
M7	Ion Trap	509888	

PARTS LIST AND DESCRIPTIONS (Continued)

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
B1	Trimmer	508071	Horiz. Drive (10-160MMF)
	Knob	509348	Channel Selector (Models 9202A & 9202B)
	Knob	509016	Channel Selector (All Models except 9202A & 9202B)
	Knob	509368	Contrast (Models 9202A & 9202B)
	Knob	509019	Contrast (All Models except 9202A 2 9202B)
	Knob	509349	Fine Tuning (Models 9202A & 9202B)
	Knob	509017	Fine Tuning (All Models except 9202A & 9202B)
	Knob	509369	Off/On Volume (Models 9202A & 9202B)
	Knob	509018	Off/On Volume (All Models except 9202A & 9202B)
	Ant. Coils	507953	Channel #3 (Coded 3F)
	Ant. Coils	507954	Channel #4 (Coded 4F)
	Ant. Coils	507955	Channel #5 (Coded 5F)
	Ant. Coils	507956	Channel #6 (Coded 6F)
	Ant. Coils	507957	Channel #7 (Coded 7F)
	Ant. Coils	507958	Channel #8 (Coded 8F)
	Ant. Coils	507959	Channel #9 (Coded 9F)
	Ant. Coils	507960	Channel #10 (Coded 10F)
	Ant. Coils	507961	Channel #11 (Coded 11F)
	Ant. Coils	507962	Channel #12 (Coded 12F)
	Ant. Coils	507963	Channel #13 (Coded 13F)
	RF, Mixer Grid & Osc. Coil	507973	Channel #3 (Coded 3F)
	RF, Mixer Grid & Osc. Coil	507974	Channel #4 (Coded 4F)
	RF, Mixer Grid & Osc. Coil	507975	Channel #5 (Coded 5F)
	RF, Mixer Grid & Osc. Coil	507976	Channel #6 (Coded 6F)
	RF, Mixer Grid & Osc. Coil	507977	Channel #7 (Coded 7F)
	RF, Mixer Grid & Osc. Coil	507978	Channel #8 (Coded 8F)
	RF, Mixer Grid & Osc. Coil	507979	Channel #9 (Coded 9F)
	RF, Mixer Grid & Osc. Coil	507980	Channel #10 (Coded 10F)
	RF, Mixer Grid & Osc. Coil	507981	Channel #11 (Coded 11F)
	RF, Mixer Grid & Osc. Coil	507982	Channel #12 (Coded 12F)
	RF, Mixer Grid & Osc. Coil	507983	Channel #13 (Coded 13F)



RF TUNER PART NO. 520306

ALTERNATE TUNER SCHEMATIC

PROPE
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PHOTOFACT* Folder

*TRADE MARK

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MODELS 324CDM, 324C5M

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MODEL 324C5M

STROMBERG-CARLSON
MODELS 324CDM, 324C5M

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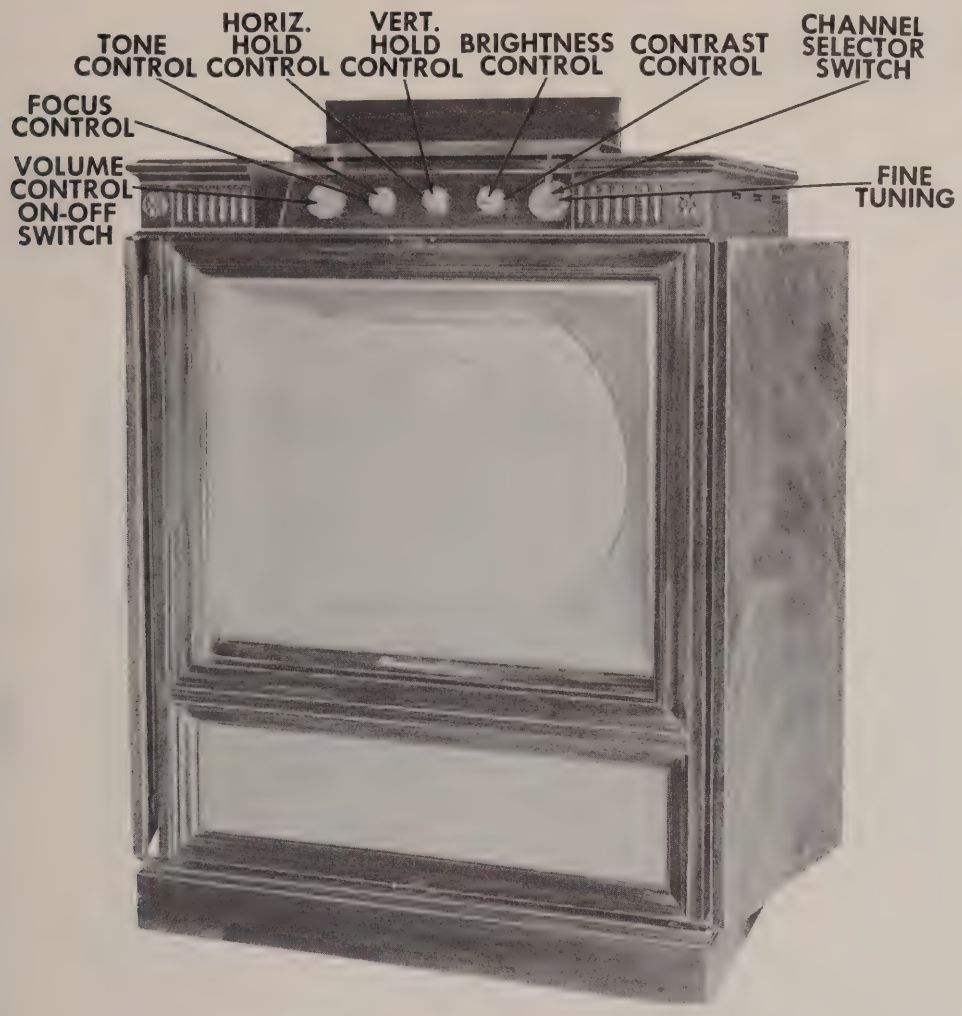
DATE 7-52 SET 172 FOLDER 10

STROMBERG-CARLSON MODELS 324CDM, 324C5M



Stromberg Carlson 324CDM

TRADE NAME	Stromberg Carlson Models 324CDM, 324C5M
MANUFACTURER	Stromberg Carlson Co., 100 Carlson Rd., Rochester 3, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty Three

POWER SUPPLY 110-120 Volts AC - 60 Cycle RATING 2.5 Amp. @ 117 Volts AC
TUNING RANGE—Channels 2 thru 13

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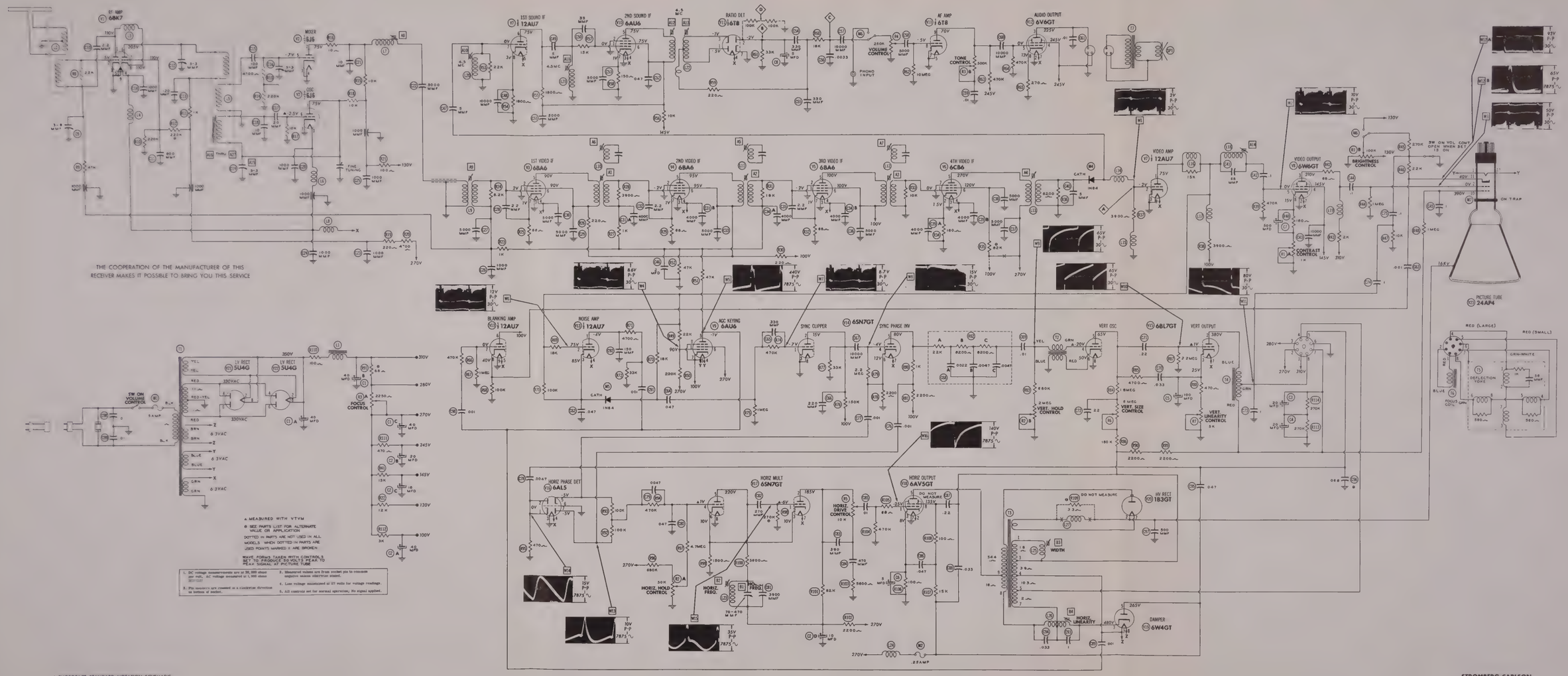
STROMBERG-CARLSON
MODELS 324CDM, 324C5M


RF AMP 6BK7
MIXER 6BJ6
OSC 6BJ6
1ST SOUND IF 12AU7
2ND SOUND IF 6AU6
RATIO DET 6T8
AF AMP 6T8
AUDIO OUTPUT 6V6GT
1ST VIDEO IF 6BA6
2ND VIDEO IF 6BA6
3RD VIDEO IF 6BA6
4TH VIDEO IF 6CB6
VIDEO AMP 12AU7
VIDEO OUTPUT 6W6GT
PICTURE TUBE 24AP4
BLANKING AMP 12AU7
NOISE AMP 12AU7
AGC KEYING 6AU6
SYNC CLIPPER 6SN7GT
SYNC PHASE INV
VERT OSC 6BL7GT
VERT OUTPUT
HORIZ PHASE DET 6AL5
HORIZ MULT 6SN7GT
HORIZ OUTPUT 6AV5GT
HV RECT 1B3GT
DAMPER 6W4GT
LV RECT 5U4G
LV RECT 5U4G
VOLUME CONTROL
TONE CONTROL
BRIGHTNESS CONTROL
CONTRAST CONTROL
FOCUS CONTROL
VERT. HOLD CONTROL
VERT. SIZE CONTROL
VERT LINEARITY CONTROL
HORIZ. DRIVE CONTROL
HORIZ. HOLD CONTROL
HORIZ. FREQ.
WIDTH
HORIZ. LINEARITY
FINE TUNING
SW ON VOL CONT OPEN WHEN SET IS ON
DEFLECTION YOKE
RED (LARGE)
RED (SMALL)
GRN-WHITE
PHONO INPUT
DO NOT MEASURE
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A MEASURED WITH VTVM
B SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 25,000 ohms per volt. AC voltage measured at 1,000 ohms per volt.
2. Measured values are from socket pin to common negative source wherever stated.
3. Pin numbers are counted in a clockwise direction as bottom of socket.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.

STROMBERG-CARLSON
MODELS 324CDM, 324CSM

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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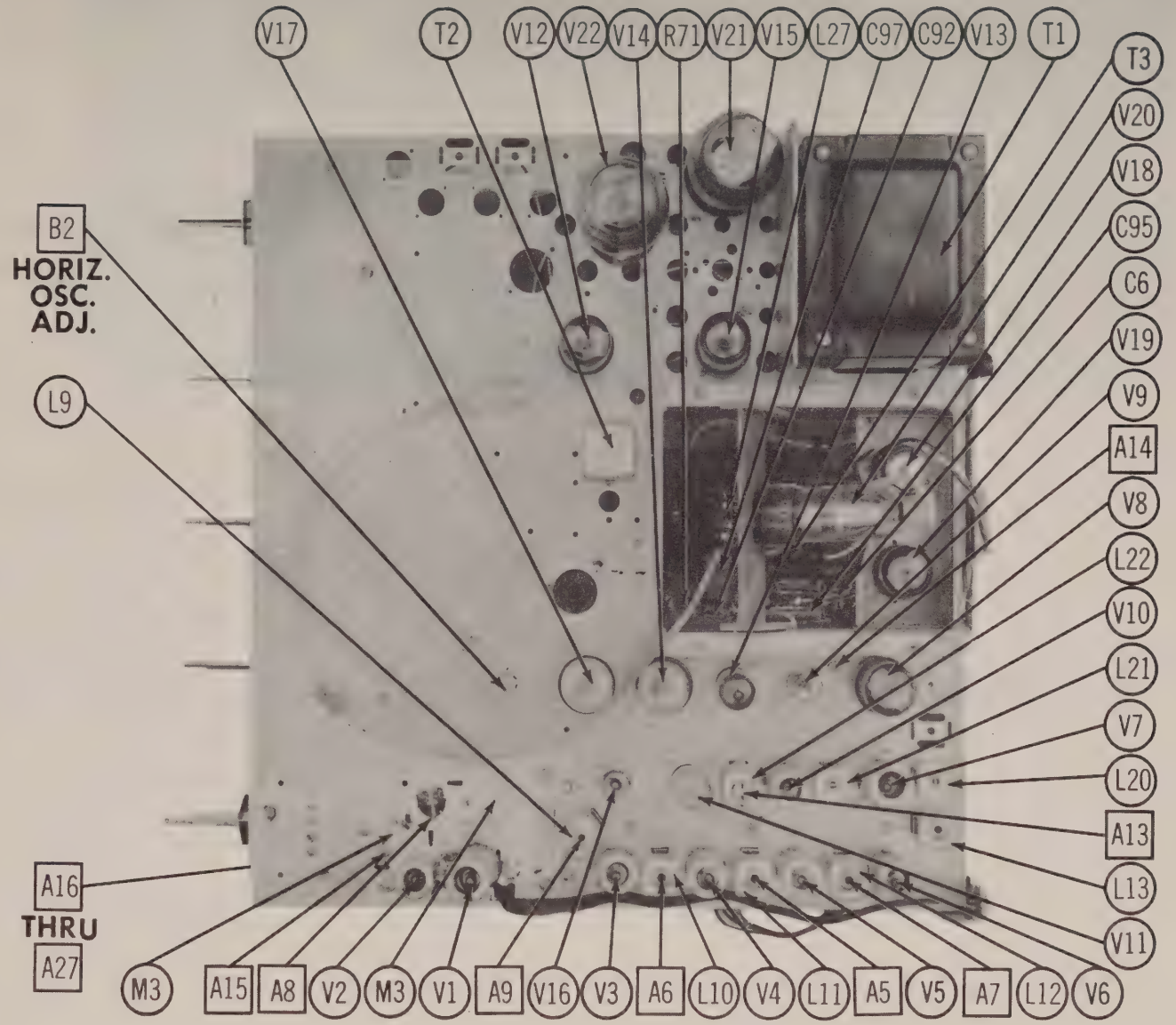
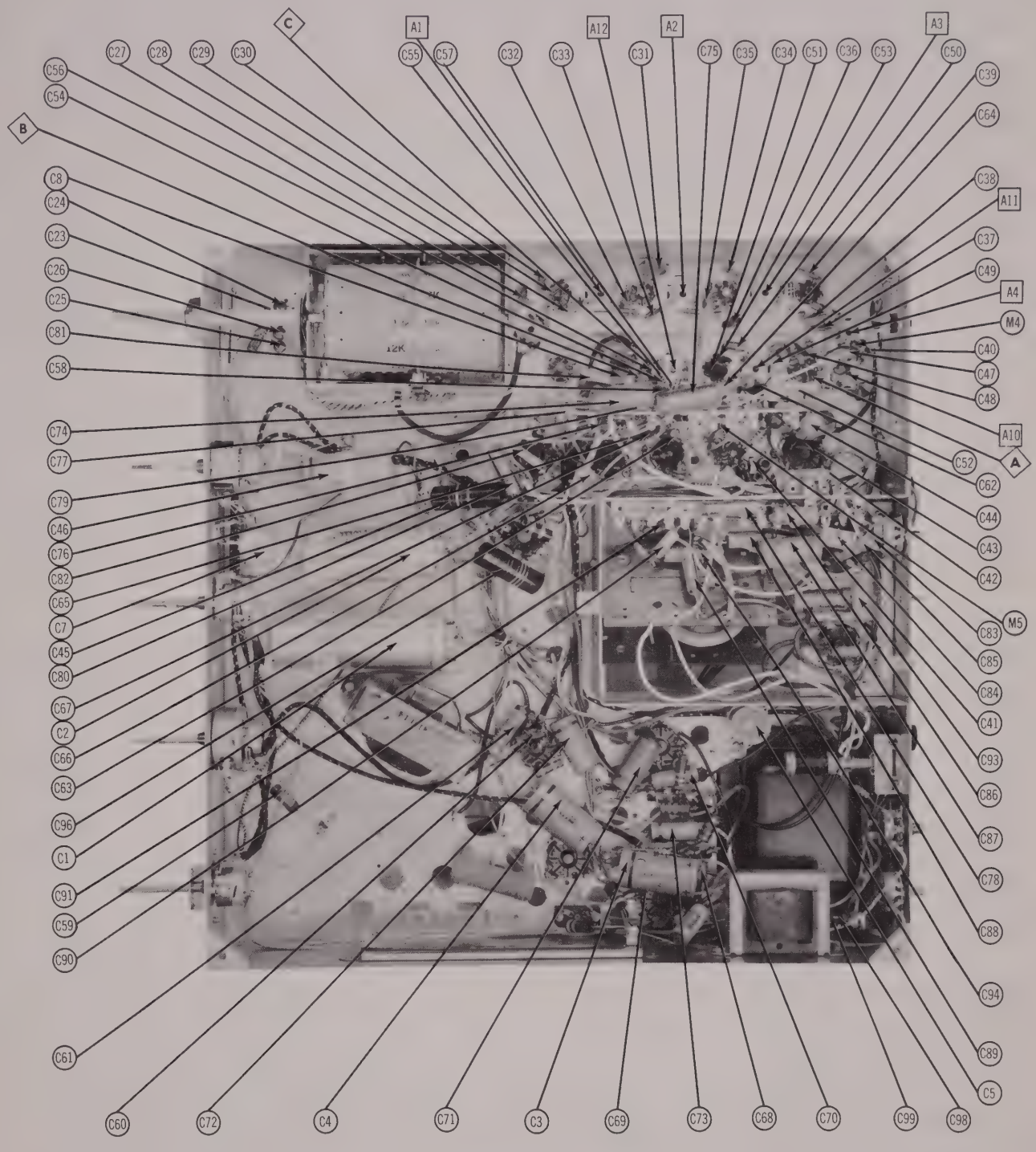


CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

TOP VIEW

BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard can be eliminated by removing the horizontal multi-vibrator tube V17 from its socket. The contrast control should be at maximum position.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C46. Connect the positive lead to chassis. Remove the converter tube (V2) and replace with a 6J6 which has pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications. During Video IF Alignment attenuate the generator output to maintain approximately two volts response at the video detector. Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1	100MMF	High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis.	24MC (10MC swp.)	23.7MC 23.0MC 26.0MC 25.3MC	Any	Vert. amp. thru 47KΩ to Point (A). Low side to chassis.	A1 A2 A3 A4	Adjust for response curve as per Fig. 1. A1 affects response at 23.7MC, A2 at 23MC, A3 at 26MC and A4 at 25.3MC.
2.	"	"	"	21.9MC	"	"	A5 A6	Adjust A5 for MINIMUM response at 21.9MC Adjust A6 to place reactance trap notch as per Fig. 2.
3.	"	"	"	27.9MC	"	"	A7	Adjust for MINIMUM response at 27.9MC. Repeat Step 1.
4.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	"	22.7MC 26.4MC	"	"	A8, A9	Adjust for response curve as per fig. 3 with markers at 50% response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point (B) to chassis. The junction of these two resistors is alignment point (D) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.001MFD	High side to point (A). Low side to chassis.	4.5MC (Unmod.)	Any	DC probe to point (B). Common to chassis.	A10, A11 A12	Adjust for maximum deflection.
6.	"	"	"	"	DC probe to point (C). Common to point (D).	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	.001MFD	High side to Point (A). Low side to chassis.	4.5MC (450KC swp.)	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor C8. Adjust for maximum amplitude and symmetry as per fig. 4.
6.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A13	Reconnect capacitor C8. Adjust so that 4.5MC occurs at center of crossover lines as per fig. 5. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	.001MFD	High side to Point (A). Low side to chassis.	Not used	4.5MC (400%mod.)	Any	Vert. amp. to pin 2 (grid) of picture tube. Low side to chassis.	A14	Adjust for MINIMUM 400% indication on scope.

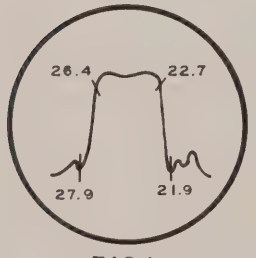


FIG.1

FIG.2

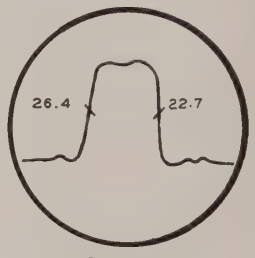


FIG.3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of channels it may be possible to correct them in one step using A15.
It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct any individual channel. If adjustment of A15 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel adjustment screws are reached through a hole just to the right of the channel switch shaft.
The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna termin terminals with 120Ω in each lead.	213MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point (A) Low side to chassis.	A16	Adjust to place sound marker in sound notch as per fig. 6. Video marker should fall at 50% response.
			207MC (10MC Swp)	205.25MC 209.75MC	12		A17	
			201MC (10MC Swp)	199.25MC 203.75MC	11		A18	
			195MC (10MC Swp)	193.25MC 197.75MC	10		A19	
			189MC (10MC Swp)	187.25MC 191.75MC	9		A20	
			183MC (10MC Swp)	181.25MC 185.75MC	8		A21	
			177MC (10MC Swp)	175.25MC 179.75MC	7		A22	
			85MC (10MC Swp)	83.25MC 87.75MC	6		A23	
			79MC (10MC Swp)	77.25MC 81.75MC	5		A24	
			69MC (10MC Swp)	67.25MC 71.75MC	4		A25	
			63MC (10MC Swp)	61.25MC 65.75MC	3		A26	
			57MC (10MC Swp)	55.25MC 59.75MC	2		A27	

THE RF PORTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE, ALIGNMENT SHOULD NOT BE ATTEMPTED IN THE FIELD.

FIG. 4

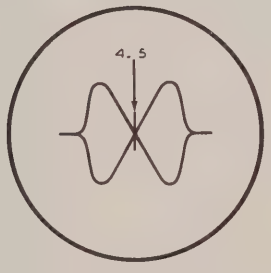


FIG. 5

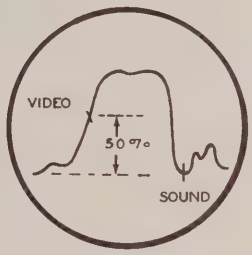
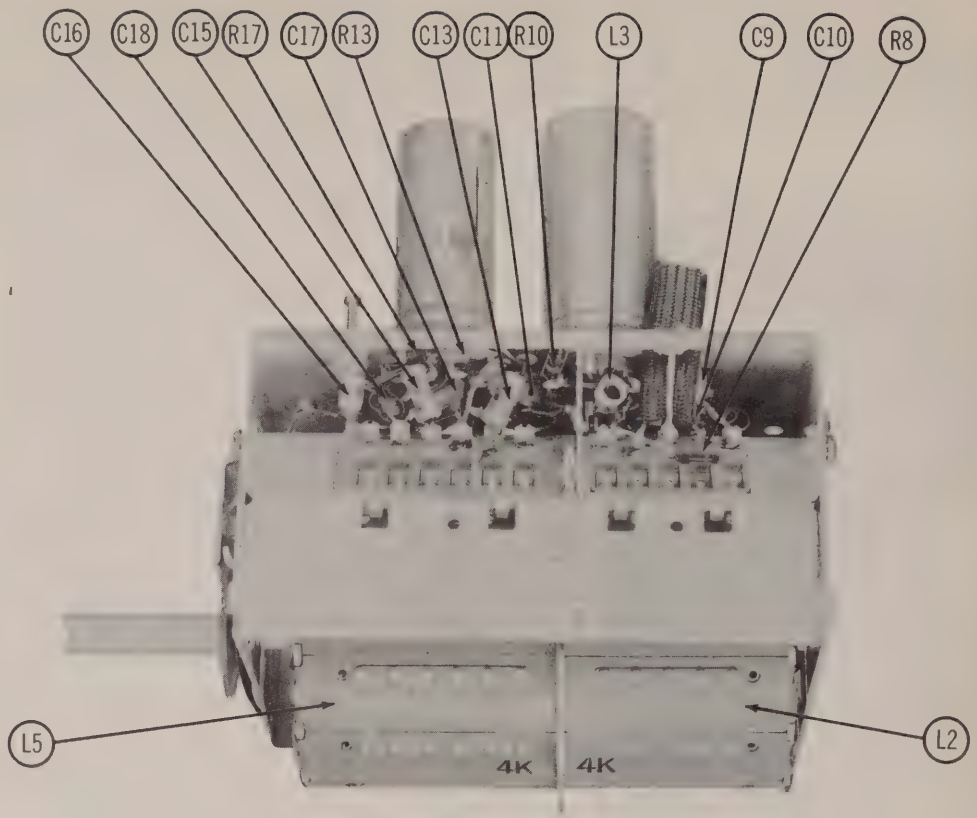


FIG. 6

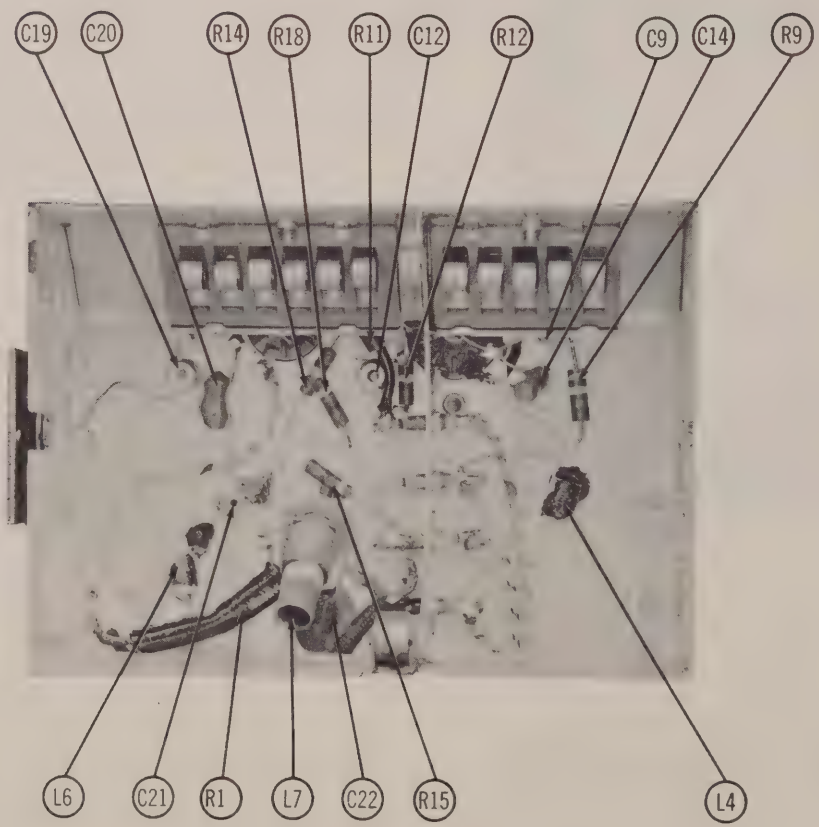
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	95KΩ	0Ω	.2Ω	0Ω	†6KΩ	110KΩ	INF	0Ω
V 2	6J6	†22KΩ	†22KΩ	.2Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6BA6	48KΩ	0Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	68Ω		
V 4	6BA6	48KΩ	0Ω	0Ω	.1Ω	†3.5KΩ	†3.5KΩ	68Ω		
V 5	6BA6	47KΩ	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	68Ω		
V 6	6CB6	.7Ω	180Ω	0Ω	.1Ω	†290Ω	†82KΩ	0Ω		
V 7	12AU7	†7.2KΩ	3.9KΩ	0Ω	.1Ω	.1Ω	†27KΩ	3.4Ω	1.8KΩ	0Ω
V 8	6W6GT	0Ω	0Ω	†2.1KΩ	†15KΩ	470KΩ	#800KΩ	.1Ω	330Ω	
V 9	6AU6	†28KΩ	†3.3KΩ	■0Ω	■.2Ω	95KΩ	†290Ω	†3.3KΩ		
V 10	6AU6	15KΩ	0Ω	0Ω	.1Ω	†25KΩ	†25KΩ	150Ω		
V 11	6T8	INF	33KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	†470KΩ
V 12	6V6GT	0Ω	0Ω	†1.2KΩ	†760Ω	470KΩ	†470KΩ	.1Ω	270Ω	
V 13	12AU7	38KΩ	†25KΩ	†26KΩ	.1Ω	.1Ω	†3.3KΩ	1Meg	100KΩ	0Ω
V 14	6SN7GT	1.5Meg	33KΩ	0Ω	2.2Meg	†6.5KΩ	2.2KΩ	.1Ω	0Ω	
V 15	6BL7GT	2.2Meg	#5.7KΩ	2.2KΩ	1.4Meg	#3Meg	170Ω	.1Ω	0Ω	
V 16	6AL5	470Ω	470Ω	0Ω	.1Ω	5.3Meg	0Ω	5.3Meg		
V 17	6SN7GT	270KΩ	†84KΩ	1.5KΩ	4.7Meg	†8KΩ	1.5KΩ	.1Ω	0Ω	
V 18	6AV5GT	470KΩ	.1Ω	100Ω	INF	#22Ω	INF	0Ω	†15KΩ	
V 19	6W4GT	INF	†290Ω	350KΩ	INF	†290Ω	†290Ω	#15Ω	#15Ω	
V 20	1 B3GT	PINS 1 - 8 HAVE INF RESISTANCE								Top Cap #565Ω
V 21	5U4G	†12KΩ	40KΩ	INF	11Ω	INF	11Ω	INF	40KΩ	
V 22	5U4G	INF	40KΩ	†4.8KΩ	11Ω	INF	11Ω	INF	40KΩ	
V 23	24AP4	■0Ω	1Meg	PIN 10 #1Meg	PIN 11 280KΩ	PIN 12 ■.2Ω				

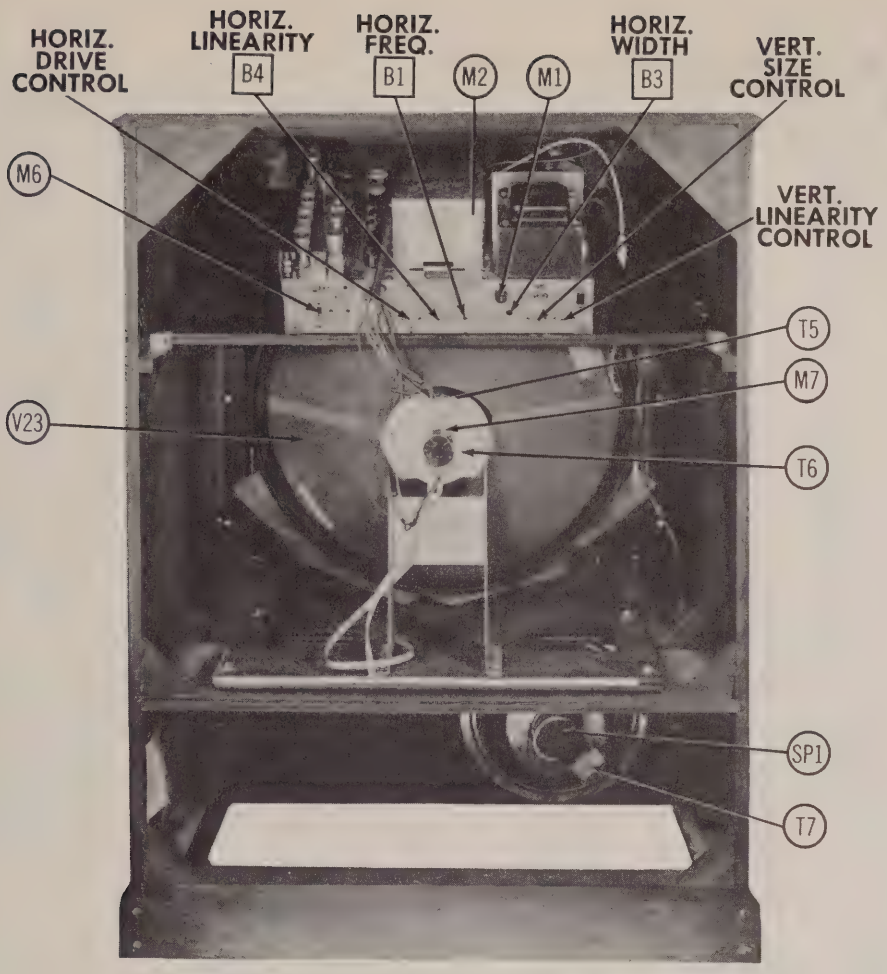
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PINS 8 OF V21 & V22
#MEASURED FROM PIN 3 OF V19
■ MEASURED FROM 100 VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV Station, preferably a test pattern. The picture should be in horizontal sync with the horizontal hold control near the middle of its range. If unable to obtain horizontal sync by adjusting the horizontal hold control adjust the horizontal frequency trimmer (B1). If unable to obtain sync by means of B1, Set B1 one turn from fully clockwise, set the horizontal hold at the middle of its range and adjust the horizontal frequency slug (B2) until picture synchronizes horizontally.

Set the horizontal drive control for the best compromise between width and horizontal linearity.

Adjust the horizontal size slug (B3) for a picture slightly wider than enough to fill the picture mask.

Adjust the horizontal linearity slug (B4) for a symmetrical picture from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 7 push on and 2 set screw type Control Knobs from front Panel.
2. Remove 12 wood screws. Remove rear Cover.
3. Disconnect Yoke and Focus Plug, Picture tube socket, HV Lead and Speaker Plug.
4. Remove 4 Bolts. Remove Chassis Mounting Board.
5. Remove 4 Chassis Bolts. Remove Chassis.
6. Remove 4 Speed nuts holding Speaker. Remove Speaker.

NOTE: For Picture Tube removal, remove 4 bolts from Crt mounting board. Remove from Cabinet.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	162173	6BK7	9AJ	
V2	Converter	162118	6J6	7EF	
V3	1st. Video IF Amp.	163012	6BA6	7BK	
V4	2nd. Video IFAmp.	163012	6BA6	7BK	
V5	3rd. Video IF Amp.	163012	6BA6	7BK	
V6	4th. Video IF Amp.	163092	6CB6	7CH	
V7	Video Amplifier - 1st. Sound IF Amp.	162042	12AU7	9A	
V8	Video Output	162101	6W6GT	7AC	
V9	AGC Keying	163032	6AU6	7BK	
V10	2nd. Sound IF Amp.	163032	6AU6	7BK	
V11	Ratio Detector - AF Amplifier	162077	6T8	9E	
V12	Audio Output	163136	6V6GT	7AC	
V13	Noise Amplifier - Blanking Amp.	162042	12AU7	9A	
V14	Phase Inverter - Sync Clipper	163018	6SN7GT	8BD	
V15	Vert. Oscillator - Vert. Output	163102	6BL7GT	8BD	
V16	Horiz. Phase Det.	162022	6AL5	6BT	
V17	Horiz. Mult	162018	6SN7GT	8BD	
V18	Horiz. Output	162100	6AV5GT	6CK	
V19	Damper	162079	6W4GT	4CG	
V20	HV Rectifier	162029	1B3GT	3C	
V21	LV Rectifier	162107	5U4G	5T	
V22	LV Rectifier	162107	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V23	(24AP4)#162099		12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg Carlson PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	111099	AFH3-44		UPT44445		TVL-3787	▲ Filter
B	40	450							▲ Filter
C	40	450							■ Decoupling
C2A	40	450	111094	AFH4-18		UPT42I145		TVL-4840	▲ Decoupling
B	20	450							■ Audio Output Dec.
C	10	450							▲ Decoupling
D	10	450							Horiz. MV Decoupling
C3	20	300	111089	PRS450/20		BR2035A		TVA-1608	Vert. Output Dec.
C4	20	300	111089	PRS450/20		BR2035A		TVA-1608	Vert. Output Dec.
C5	100	50	111097	PRS50/100		BRH501		TVA-1310	Vert. Output Cathode
C6	5	50	111047	PRS150/4		BBR-5-50		TVA-1303	Horiz. Output Cathode
C7	500	12	111082	PRS12/500		BRH125A		TVA-1132	Video Output Cathode
C8	5	50	111047	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C9	3-9		171213		829-10				Variable Trimmer
C10	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C11	200		171217	BPD-0008	829-3	TM5T8	801-001	5HK-D1	RF Amp. Grid Bypass
C12	.5-3		171212		829-3				Variable Trimmer
C13	120		171216	SI120	D6-121	TM5T12	GP2K-121	5GA-T12	RF Amp. Plate Dec.
C14	1000		110599	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C15	100		110401	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C16	.5-3		171212		829-3				Variable Trimmer
C17	30		171215	SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C18	10		171222	SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C19	.5-3		171212		829-3				Variable Trimmer
C20	1000		110599	SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Conv. Fil. Bypass
C21	10		171214	SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	IF Coupling
C23	1000		110050	SI1000	D6-102	TM5D1	GP2L-102	50IC-1000	RF Bypass
C24	1000		110050	SI1000	D6-102	TM5D1	GP2L-102	50IC-1000	Fil. Bypass
C25	1000		110050	SI1000	D6-102	TM5D1	GP2L-102	50IC-1000	RF Bypass
C26	1000		110050	SI1000	D6-102	TM5D1	GP2L-102	50IC-1000	AGC Filter
C27	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C28	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C29	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Deg.
C30	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil. Bypass
C31A	4000		110685	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	AGC Filter
B	4000				D6-402				2nd. Video IF Fil.
C32	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C33	5000		110486	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Dec.
C34A	4000		110685	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	AGC Filter
B	4000				D6-402				3rd. Video IF Fil.
C35	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C36	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C37	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	4th. Video IF Plate
C38	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	4th. Video IF Screen
C39A	4000		110685	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	4th. Video IF Cathode
B	4000				D6-402				4th. Video IF Fil.
C40	5		110598	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	Fixed Trimmer
C41	68			SI68	D6-680	5R5Q7	GP1K-680	5GA-Q68	Fixed Trimmer
C42	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C43	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Video Output Screen
C44	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C45	.1	600	110743	P688-1	DF-104	PTE6P1		6TM-P1	Acc. Anode Bypass
C46	2	50	110675						AGC Filter
C47	5		110598	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	Sound IF Coupling
C48	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	1st. Sound IF Cathode
C49	5		110598	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	Sound IF Coupling
C50	33		110486		TCN-33		N750K-330	5TCU-Q33	2nd. Sound IF Grid
C51	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Sound IF Dec.
C52	.047	200	110660	P288-047	DF-503	PTE4S47		2TM-S47	2nd. Sound IF Dec.
C53	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Sound IF Cathode
C54	330		110454	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C55	330		110454	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg Carlson PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C56	.0033	400	110715	P688-0033	D6-332	PTE6D33	GP2-333-332	6TM-D3	De-Emphasis
C57	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling
C58	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C59	.01	400	110718	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C60	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling
C61	.01	1000	110737	P1088-01		PTE16S1		MB-S1	Audio Output Plate
C62	.047	400	110722	P488-047	DF-503	PTE4S47	-	4TM-S47	Noise Amp. Cathode
C63	.001	600	110712	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Blanking Net.
C64	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Sync. Coupling
C65	330		110463	SI330	D6-331		GP2K-331	5GA-T33	Sync. Coupling
C66	220		110453	SI220	D6-221	5R5T25	GP2K-221	5GA-T22	RF Bypass
C67	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Sync. Coupling
C68A	.0022			P688-0022		PTE6D22	GP2-333-222		Vert. Integrator Net.
B	.0047			P688-0047	*PC-100	PTE6D47	GP2-333-472	*101C1	Vert. Integrator Net.
C	.0047			P688-0047		PTE6D47	GP2-333-472		Vert. Integrator Net.
C69	.01	600	110718	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Vert. Osc. Grid Cap.
C70	.033	600	110740	P688-033					Vert. Discharge
C71	.22	400	110745	P488-22		PTE4P22		4TM-P22	Vert. Sweep Coupling
C72	.22	400	110745	P488-22		PTE4P22		4TM-P22	Vert. Osc. Dec.
C73	.1	400	110743	P488-1	DF-104	PTE4P1		4TM-P1	Integrator Net.
C74	.1	400	110743	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C75	.1	400	110743	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C76	.001	400	110712	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C77	.001	400	110712	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C78	.0047	1000	110754	P1088-0047		PTE16D47		MB-D47	Horiz. Feedback
C79	.0047	400	110716	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Horiz. AFC Coupling
C80	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Horiz. AFC Filter
C81	3900	500	110309	1464-004		1DR5D4			Fixed Trimmer
C82	270	500	110208	1469-0003		5R5T3		MS-33	Horiz. MV Feedback
C83	390	500	110262	1469-0004		5R5T4		MS-34	Horiz. Discharge
C84	470	500	110209	1469-0005		5R5T5		MS-35	Horiz. Discharge
C85	.01	600	110737	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Horiz. Sweep Coupling
C86	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Horiz. Output Screen
C87	.22	400	110726	P488-22		PTE4P22		4TM-P22	Horiz. Feedback
C88	.033	400	110721	P488-033					Voltage Divider
C89	.001	400	110750	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Feedback
C90	.001	600	110712	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Feedback
C91	.001	600	110712	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Integrator Net.
C92	150	3000	110696						Integrator Net.
C93	.1	400	110724	P488-1		PTE4P1		4TM-P1	Damper Filter
C94	.033	400	110721	P488-033					Damper Filter
C95	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Horiz. Sweep Coupling
C96	.068	1000		P1088-068					RF Bypass †
C97	500	20000	110680	HV20A					HV Filter
C98	.01	1000	110568	P1088-01		PJI6S1		MB-S1	Line Filter
C99	.01	1000	110568	P1088-01		PJI6S1		MB-S1	Line Filter

♦ Items C68A, C68B, C68C, R82A, R82B, R82C are combined in one unit.
† Some models use .047MFD in this application (Part #110760)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1000Ω	2	145140	QJ-289 *			Contrast Control - Wire Wound - Panel
B	100KΩ						Brightness Control - Rear
R2A	50KΩ		145128	QJ-69 * *	RTV-75		Horiz. Hold Control - Panel
B	2Meg						Vert. Hold Control - Rear
R3A	2250Ω	4	145139				Focus Control - Wire Wound - Panel
B	500KΩ						Tone Control - Rear
R4A	250KΩ		145134	Q13-130	AG-64-Z	B-51-S	Volume Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R4A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R4A per instructions
R5A	10KΩ	½	145132	Q11-116	AG-27-S	AN-14	Horiz. Drive Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	6Meg	½	145100		AG-86-S	AN-87	Vert.Size Control
B	Shaft		Not Req.		FKS-1/4	AK-1	Attach to R6A per instructions
R7A	5000Ω	½	145079	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R7A per instructions

* CONCENTRIKIT EQUIVALENT - Kit K-3, BASE ELEMENTS & SHAFTS W11-108 & P3-111 (Panel)
B11-128 & R2-131 (Rear)
* * CONCENTRIKIT EQUIVALENT - Kit K-2, BASE ELEMENTS & SHAFTS B11-123 & P1-112 (Panel)
B11-139 & R2-131 (Rear)

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg Carlson PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	22KΩ		149109		Coil Shunt
R9	47KΩ 20%		149111	BTS-47K	RF Amp. Grid
R10	220KΩ 20%		149115	BTS-220K	RF Amp. Grid
R11	1000Ω 20%		149101	BTS-1000	RF Amp. Plate Decoupling
R12	220KΩ		149115		Voltage Divider - See Note 1
R13	4700Ω		28166	BTS-4700	Mixer Grid
R14	220KΩ 20%		149115	BTS-220K	Mixer Grid
R15	10KΩ		149107	BTS-10K	Mixer Plate
R16	10Ω		149089		Parasitic Suppressor
R17	10KΩ		28170	BTS-10K	Osc. Grid
R18	10KΩ		28170	BTS-10K	Osc. Plate
R19	220Ω 20%		149097	BTS-220	Voltage Dropping
R20	4700Ω 20%	2	149080	BTB-4700	Voltage Dropping
R21	100Ω 20%		149095	BTS-100	Decoupling
R22	12KΩ	5	149335	1 3/4A-12K	Voltage Divider - Wire Wound
R23	1000Ω 20%		149101	BTS-1000	AGC Network
R24	8200Ω		28165	BTS-8200	1st. Video IF Coil Shunt
R25	68Ω		28144		1st. Video IF Amp. Cathode
R26	220Ω 20%		149097	BTS-220	1st. Video IF Amp. Decoupling
R27	1000Ω 20%		149101	BTS-1000	AGC Network
R28	3900Ω		28165	BTS-3900	2nd. Video IF Coil Shunt
R29	68Ω		28144		2nd. Video IF Amp. Cathode
R30	220Ω 20%		149097	BTS-220	2nd. Video IF Amp. Decoupling
R31	18KΩ		28173	BTS-18K	3rd. Video IF Coil Shunt
R32	68Ω		28144		3rd. Video IF Amp. Cathode
R33	10KΩ		28170		4th. Video Coil Shunt
R34	180Ω		28149	BTS-180	4th. Video IF Amp. Cathode
R35	82KΩ			BTS-82K	4th. Video IF Amp. Screen - See Note 2

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg Carlson PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R36	8200Ω		28169		5th. Video IF Coil Shunt
R37	3900Ω		28165	BTS-3900	Video Det. Load
R38	3900Ω		28165	BTS-3900	Video Amp. Plate
R39	470KΩ 20%		149117	BTS-470K	Video Output Grid
R40	180Ω		28149	BTS-180	Video Output Cathode
R41	15KΩ	5	33912	1 3/4A-15K	Voltage Divider - Wire Wound
R42	68Ω		28144		Parasitic Suppressor
R43	2000Ω	7	149411	1 3/4A-2000	Video Output Plate
R44	1Meg 20%		149119	BTS-1Meg	Picture Tube Grid
R45	270KΩ		28184	BTS-270K	Picture Tube Cathode
R46	22KΩ		149384	BTS-22K	Picture Tube Cathode
R47	10KΩ 20%		149107	BTS-10K	Vert. Blanking Network
R48	1Meg 20%		149119	BTS-1Meg	ACC Anode Load
R49	22KΩ		149384	BTS-22K	Keyed AGC Grid
R50	220KΩ 20%		149115	BTS-220K	Voltage Divider
R51	47KΩ 20%		149111	BTS-47K	AGC Network
R52	47KΩ 20%		149111	BTS-47K	AGC Network
R53	22KΩ		149109	BTS-22K	1st. Sound IF Coil Shunt
R54	1800Ω		28161	BTS-1800	1st. Sound IF Amp. Cathode
R55	1800Ω		28161	BTS-1800	1st. Sound IF Amp. Plate
R56	10KΩ 20%		149144	BTA-10K	Voltage Divider
R57	15KΩ 20%		149108	BTS-15K	2nd. Sound IF Amp. Grid
R58	150Ω		149096	BTS-150	2nd. Sound IF Amp. Cathode
R59	220Ω 20%		149097	BTS-220	Balancing
R60	18KΩ		28173	BTS-18K	De-emphasis
R61	33KΩ 20%		149110	BTS-33K	Ratio Det. Diode Load
R62	10Meg 20%		149125	BTS-10Meg	AF Amp. Grid
R63	470KΩ 20%		149117	BTS-470K	AF Amp. Plate
R64	470KΩ 20%		149117	BTS-470K	Output Grid
R65	270Ω		149170	BTA-270	Output Cathode
R66	470KΩ 20%		149117	BTS-470K	Isolation
R67	1Meg 20%		149119	BTS-1Meg	Blanking Amp. Grid
R68	100KΩ 20%		149113	BTS-100K	Blanking Amp. Cathode
R69	18KΩ		28173	BTS-18K	Noise Amp. Grid
R70	100KΩ 20%		149113	BTS-100K	Noise Amp. Cathode
R71	4700Ω		149105	BTS-4700	Integrator Network
R72	33KΩ 20%		149110	BTS-33K	Differentiator
R73	18KΩ		28173	BTS-18K	Isolation
R74	470KΩ 20%		149117	BTS-470K	Isolation
R75	1Meg 20%		149119	BTS-1Meg	Sync Clipper Grid
R76	150KΩ 20%		149114	BTS-150K	Sync Clipper Plate
R77	33KΩ 20%		149110	BTS-33K	Voltage Divider
R78	2200Ω		28162	BTS-2200	Phase Inverter Cathode
R79	2.2Meg 20%		149121	BTS-2.2Meg	Phase Inverter Grid
R80	1000Ω		28158	BTS-1000	Phase Inverter Plate
R81	2200Ω		28162	BTS-2200	Phase Inverter Plate
R82A	22KΩ			BTS-22K	Integrator Network
B	8200Ω		♦	BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Integrator Network
R83	680KΩ 20%		149118	BTS-680K	Vertical Osc. Grid
R84	1.8Meg		28194	BTS-1.8Meg	Vertical Osc. Plate
R85	4700Ω		28166	BTS-4700	Vertical Peaking
R86	180KΩ		28182	BTS-180K	Vertical Osc. Dec.
R87	2.2Meg 20%		149121	BTS-2.2Meg	Vertical Output Grid
R88	470Ω 20%		149136	BTA-470	Vertical Output Cathode
R89	2200Ω		149078	BTS-2200	Filter
R90	2200Ω 20%		149078	BTS-2200	Filter
R91	68Ω	2			Focus Coil Shunt - See Note 3
R92	100KΩ		149385	BTS-100K	Horiz. Phase Det. Diode Load
R93	100KΩ		149385	BTS-100K	Horiz. Phase Det. Diode Load
R94	470KΩ 20%		149117	BTS-470K	Horiz. AFC Filter
R95	470Ω		28154	BTS-470	Horiz. Feedback
R96	680KΩ 20%		149118	BTS-680K	Voltage Divider
R97	4.7Meg		149123	BTS-4.7Meg	Horiz. MV Grid
R98	270KΩ			BTS-270K	Horiz. MV Grid See Note 4
R99	1500Ω		28160	BTS-1500	Horiz. MV Cathode
R100	5600Ω		149184	BTA-5600	Horiz. MV Plate
R101	82KΩ		28180	BTS-82K	Horiz. MV Plate
R102	2200Ω		28162	BTS-2200	Decoupling
R103	5600Ω		28167	BTS-5600	Horiz. Peaking
R104	470KΩ 20%		149117	BTS-470K	Horiz. Output Grid
R105	68Ω		28144		Parasitic Suppressor
R106	100Ω 20%		149070		Horiz. Output Cathode
R107	15KΩ	5	33912	1 3/4A-15K	Horiz. Output Screen - Wire Wound
R108	100Ω 20%		149095		Parasitic Suppressor
R109	3.3Ω		149419		H.V. Rectifier Filament - See Note 5
R110	100Ω	20	149417	2D-100	Filter - Wire Wound
R111	470Ω	2	149074	BTS-470	Filter
R112	3000Ω	20		2D-3000	Filter - Wire Wound
R113	270KΩ		28184	BTS-270K	Voltage Divider
R114	270KΩ		28184	BTS-270K	Voltage Divider

Note 1. Some Models may use a 180KΩ Resistor in this application
Note 2. Some Models may use a 220Ω Resistor in this application
Note 3. Some Models may use a 220Ω 2W. Resistor in this application
Note 4. Some Models may use a 220KΩ Resistor in this application
Note 5. Not used in all Models
♦ Items C68A, C68B, C68C, R82A, R82B & R82C are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 2.5A	660VAC CT @ 325ADC	5VAC @ 6A	6.3VAC @ .9A SEC. 4 6.3VAC @ 1.2A SEC. 5 6.3VAC @ 9A	161433			

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	1250Ω	114658	A8122	A-4003	TBO-2	Vert. Osc. Trans.
T3	560Ω Tap ⓐ 16Ω	18Ω Tap ⓐ 1.8Ω, 5.7Ω, 16Ω	161042		HV0-7		Horiz. Output Trans.
T4	1300Ω Tap ⓐ 11Ω		161255	A-8123	A-3037		Vert. Output Trans.
T5A	18Ω		114730	DY-9	MDF-70		Horiz. Deflection Coils
B	45Ω						Vert. Deflection Coils
T6	270Ω		114722				Focus Coil

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	13KΩ	3.7Ω	450Ω	.4Ω	161256	A-3852	A-2901	RO-303	

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA Stromberg-Carlson PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	P. M.	4Ω	155275		12A31	
	CONE DIA.	V. C. DIA.				
SP1B	12"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Stromberg Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.325A	60Ω	2.2 Henries	161038	C-2326 ①	C-2996①	TR-3300 ①	① Drill One New Mtg. Hole.

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stromberg Carlson PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Coils	0Ω					
L3	RF Choke	0Ω					
L4	Fil. Choke	0Ω					
L5	RF, Mixer Grid & Osc. Coils	0Ω					
L6	Fil. Choke	0Ω					
L7	Conv. Plate	.3Ω					
L8	Fil. Choke	.22Ω				CLA	.47 Microhenries
L9	1st. Video IF	.1Ω	4Ω	114119			
L10	2nd. Video IF	1Ω	1Ω	114397			Includes Trap
L11	3rd. Video IF	1Ω	1Ω	114397			Includes Trap
L12	4th. Video IF	.7Ω	.7Ω	114406			Includes Trap
L13	5th. Video IF	1Ω	1Ω	114407			
L14	Peaking Coil	5.2Ω		114717			
L15	Peaking Coil	8.3Ω		114709	TV-184		
L16	Peaking Coil	7.5Ω		114638	*TV-181		Wound on 15KΩ Resistor
L17	Peaking Coil	14Ω		114691	TV-188		
L18	4.5MC Trap	1.7Ω		114383	TV-151		
L19	Peaking Coil	8.3Ω		114709	TV-184		
L20	1st. Sound IF	3.4Ω		114400			
L21	2nd. Sound IF	3.4Ω		114400			
L22	Ratio Det.	5.2Ω	.7Ω	114375			Tertiary winding .7Ω
L23	Horiz. Osc.	112Ω		114069	TV-163		
L24	RF Choke	1.8Ω		114693		CLA	2.2 Microhenries
L25	Horiz. Size	2.1Ω		114083	MWC-2		
L26	Horiz. Lin.	5.8Ω		114084			Tap ⓐ 1.6Ω
L27	Fil. Choke	3Ω				CLA	3.3 Microhenries

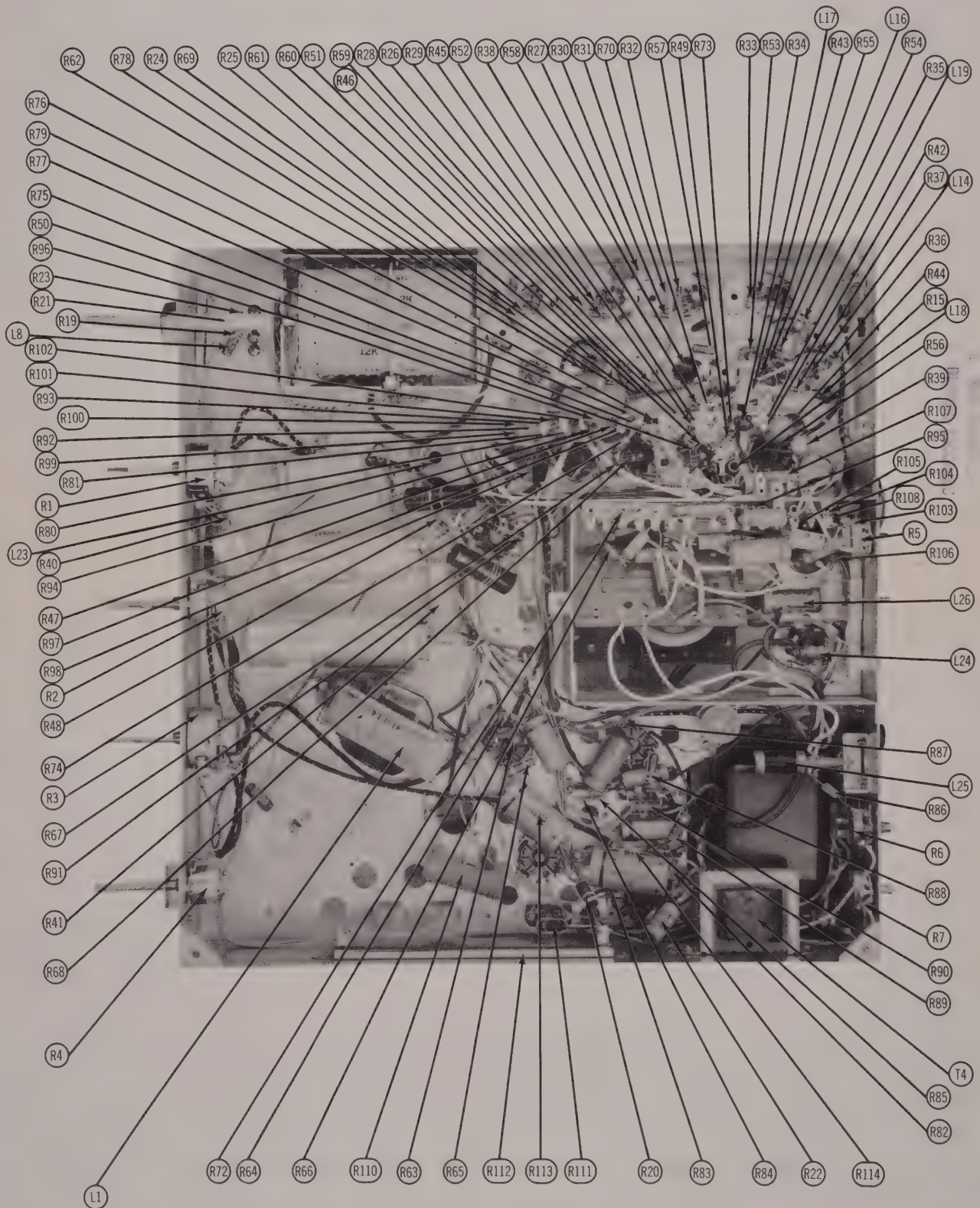
*Parallel with 15K Resistor

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Stromberg-Carlson PART No. FUSE	Stromberg-Carlson PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	MDL	5A.		128008	313005 (3AG-S/B)	342001	MDL5	HKP
M2	GJV	1/4A. 250V.			318.250 (3AG-P/T)		GJV-1/4	

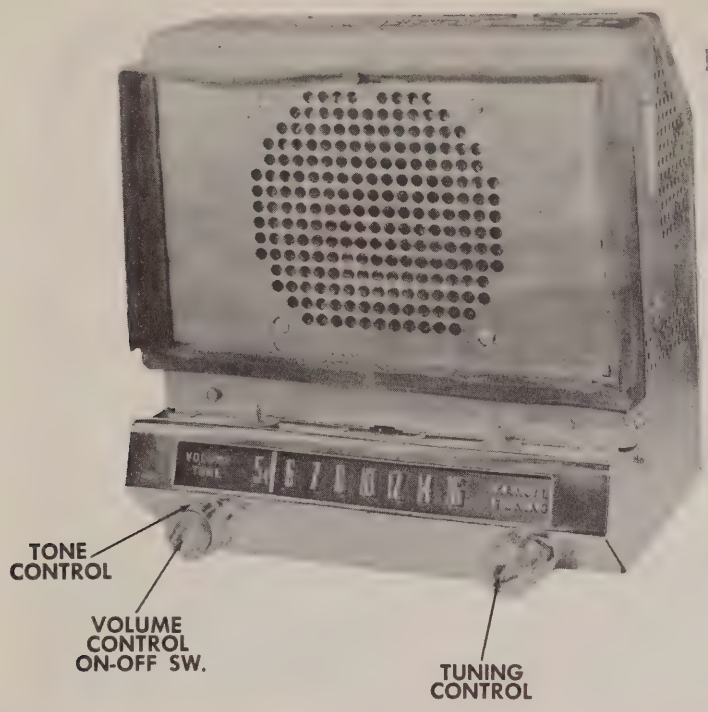
MISCELLANEOUS

ITEM No.	PART NAME	Stromberg Carlson PART No.	NOTES
M3	RF Tuner	164019	
M4	Crystal		(IN64)
M5	Crystal		(IN64)
M6	Switch	158037	
M7	Ion Trap	114645	
B1	Trimmer	110043	Horiz. Freq. (70-470MMF)
	Knob	134164	Channel Selector
	Knob	134165	Fine Tuning
	Knob	134166	Tone - Vert. Hold - Brightness
	Knob	134167	Focus - Horiz. Hold - Contrast
	Knob	134169	Off/On Volume



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PROPERTY OF
L. F. ELMENSHIP
3924 ACOMA ST.
DENVER, COLORADO



STUDEBAKER
MODEL AC2113

TRADE NAME	Studebaker Model AC2113 (Factory Model S-5123)
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Custom Built Superheterodyne Automobile Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AV6 Det. -AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 6.7 Amp. @ 6.3 Volts AC
TUNING RANGE—BROADCAST	540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the tuning control to maximum clockwise position and set the left edge of the dial pointer even with the right hand side of the "6" in "16".
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignement screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 7 (grid) of 6BE6 (V2), Low side to chassis.	455 KC (400~ Mod.)	Fully counter-clockwise	Across voice Coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	High side thru dummy to antenna receptacle Low side to chassis.	1605 KC	Fully clockwise	"	A5, A6, A7	"
	Perform step 3 only if tuning coil or core has been replaced. Otherwise proceed with step. 4.						
3.	Fig. 1	High side thru dummy to antenna receptacle. Low side to chassis.	1400 KC	1400 KC	Across Voice Coil	A8, A9, A10	Adjust in order given, for maximum output. Repeat steps 2 and 3 until no further improvement is noted.
4.	"	"	580 KC	Tune to 580 KC signal	"	All	Adjust for maximum output while rocking tuning control.
	With receiver installed in car and antenna fully extended tune in a weak signal around 1400 KC and adjust A7 for maximum volume.						

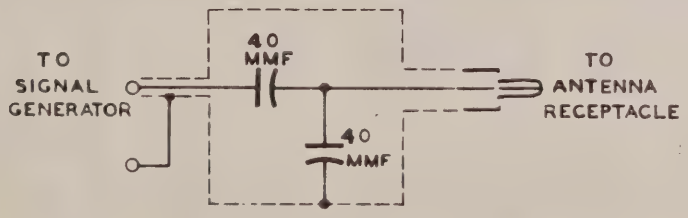


FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed." "Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. Copyright 1952 by Howard W. Sams & Co., Inc., Indianapolis 5, Indiana, U. S. of America. Copyright under International Copyright Union. All rights reserved under Inter-American Copyright Union (1910) by Howard W. Sams & Co., Inc." Printed in U. S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. -AVC-AF Amp	6AV6	6AV6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	20	350	61-0086	AFH2-50		UP2145		TVL-2755	■ Filter
B	10	350							▲ Filter
C2	10	500	60-00105407	1468-00001	D6-100	5W5Q1	GP1K-100	MS-41	Fixed Trimmer
C3	.047	400	45-3505-28	P488-047	DF-503	PTE4S47		4TM-S47	AVC Filter
C4	180	500	60-10185417	1469-0002	D6-181	5R5T2	GP2K-181	MS-32	RF Coupling
C5	100		60-10105407	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C6	410	500	60-10405237						Fixed Trimmer
C7	.047	400	45-3505-28	P488-047	DF-503	PTE4S47		4TM-S47	Screen Bypass
C8	.0047	400	45-3505-56	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Audio Coupling
C9	100		60-10105407	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	AF Amp. Plate Bypass
C10	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Tone Comp.
C11	.01	400	45-3505-41	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C12	.01	600	45-3505-58	P688-01	D6-103	PTE6S1	GP2- 333-103	6TM-S1	Audio Output Plate
C13	.0068	1600	30-4661-8	P1688-0068		PTE16D68		MB-D68	Buffer Cap.
C14	.5	100	61-0137	P185-5		MP2P5		68P20	Hash Filter
C15	330		62-133001001	SI330	D6-331		GP2K-331	5GA-T33	Hash Filter
C16	330	500	62-133001001	1468-00035	D6-331		GP2K-331	1FM-335	Hash Filter
C17	.5	120	61-0137	P185-5		MP2P5		68P20	Hash Filter

CONTROLS

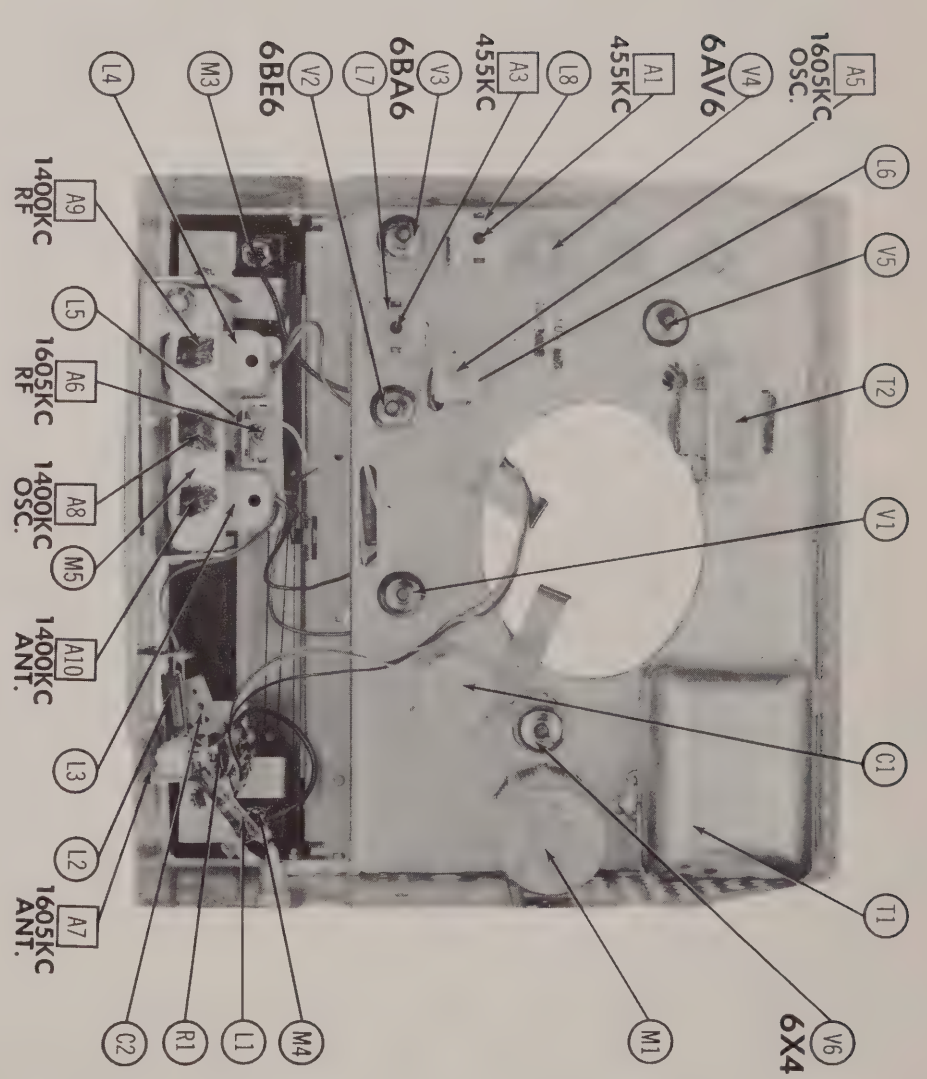
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	350KΩ	½	33-5557-8	*			Volume Control -Panel
B	500KΩ	½					Tone Control & SW-Rear

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B-13-132 & P1-212 (Panel), B13-133 & R1-228 (Rear) & SWITCH 76-1

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
R2	180Ω	½	66-1188340	BTS-180	RF Amp. Cathode
R3	10KΩ	½	66-3108340	BTS-10K	RF Amp. Plate
R4	68KΩ	½	66-3688340		Converter Grid
R5	22KΩ	½	66-3228340	BTS-22K	Osc. Grid
R6	1Meg	1	66-5104340	BTA-1Meg	AVC Network
R7	470Ω	½	66-1478340	BTS-470	IF Amp. Cathode
R8	27KΩ	1	66-3274340	BTA-27K	Screen Dropping
R9	22KΩ	½	66-3228340	BTS-22K	Diode Filter
R10	15Meg	½	66-6158340	BTS-15Meg	AF Amp. Grid
R11	220KΩ	½	66-4228340	BTS-220K	AF Amp. Plate
R12	470KΩ	½	66-4478340	BTS-470K	Output Grid
R13	22KΩ	½	66-3228340	BTS-22K	Output Grid
R14	220Ω	1	66-1224340	BTA-220	Output Cathode
R15	22KΩ	½	66-3228340	BTS-22K	Feedback Network
R16	2200Ω	1	66-2224340	BTA-2200	Filter
R17	100Ω	1	66-1104340	BTA-100	Hash Suppression
R18	100Ω	1	66-1104340	BTA-100	Hash Suppression

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 4.4A	520VCT @ .077ADC			32-8313-1	P-4062 ①	P-3068	UT-4

① Remove brackets from P-4062 and use bolts for mounting

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	4.5KΩ	3.7Ω	320Ω	.3Ω	32-8315-1	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	PHILCO PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.7Ω	36-1613-9 36-1613-6 ①	ST-108 Mod. P6-X	6A1	① Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP1B	6"	9/16"				

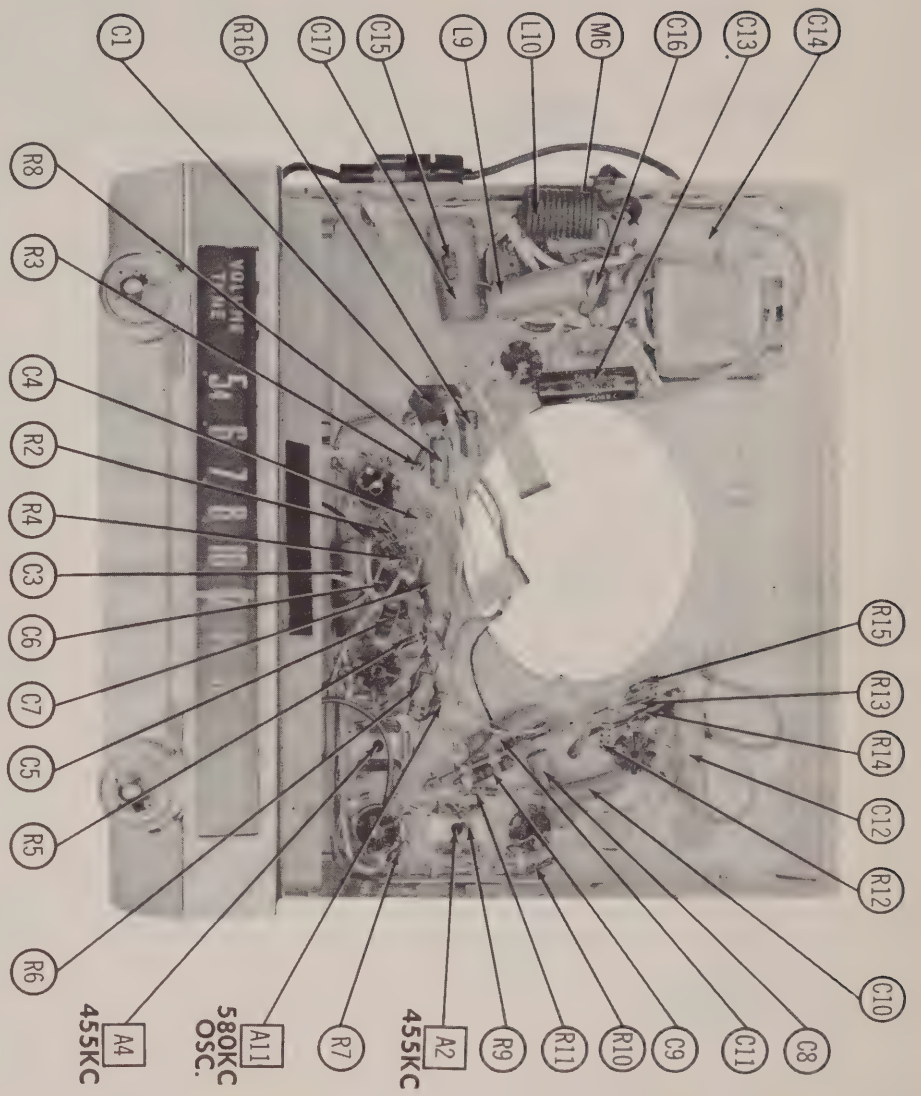
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA			NOTES
		PRI.	SEC.	PHILCO PART No.	MERIT PART No.	IRC PART No.	
L1	Ant. Choke	4Ω		32-4422-24		CL-1	5.6 Microhenries
L2	Ant. Choke	.6Ω		65-0378			
L3	Ant. Coil	10.8Ω		65-0443-25			
L4	RF Coil	11.2Ω		65-0443-26			Tap @ .8Ω
L5	Osc. Coil	2Ω		65-0443-27			Tap @ .6Ω
L6	Osc. Shunt Coil	1.9Ω		32-4110-4			
L7	Input IF	13Ω	12Ω	32-4160A	BC-352		
L8	Output IF	15.2Ω	15.2Ω	32-4240A			
L9	Fil. Choke	.1Ω		32-4170-4			
L10	Hash Choke	0Ω		32-1374-2			

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FRE-QUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				PHILCO PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6.3V. DC	115∿	83-0035 83-0026 ①	5326	5326	① Alternate Vibrator

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

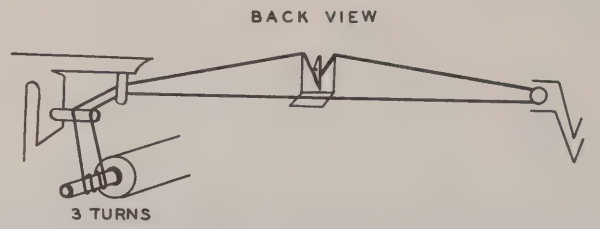
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PHILCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A. 32V.	45-2559	56-3807-4	307014	157014	SFE14	HR1

DIAL LIGHTS

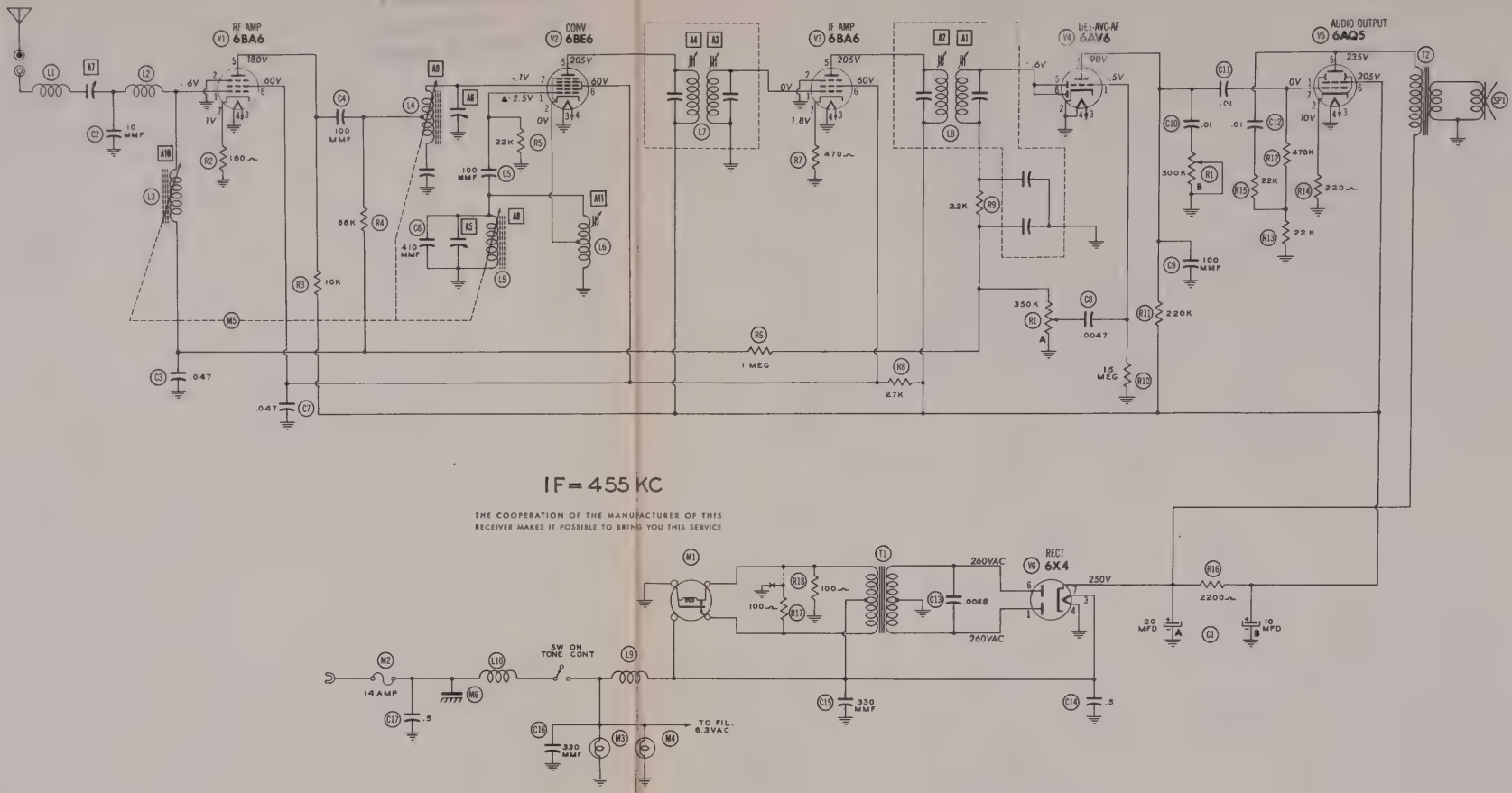
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					PHILCO PART No.		
M3	Bayonet	6-8	.15	Brown	34-2068		Type #47
M4	Bayonet	6-8	.15	Brown	34-2068		Type #47

MISCELLANEOUS

ITEM No.	PART NAME	PART No.	NOTES
M5	Tuner Unit	76-4564-2	
M6	Spark Plate	30-1235	
A5	Trimmer	31-6473-23	Osc. Adj.
A6	Trimmer	31-6513	RF Adj. (Includes 180MMF Capacitor)
A7	Trimmer	31-6472	Ant. Adj.
	Dial Glass	54-5085	
	Pointer	56-7834FCP	
	Knob	76-5279-1	Includes shaft assembly (Volume and tone)
	Knob	27-4687-11	Tuning



DIAL CORD DRIVE



IF = 455 KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	1.3Meg	0Ω	.4Ω	0Ω	†12KΩ	†29KΩ	180Ω
V 2	6BE6	22KΩ	.6Ω	0Ω	.4Ω	†2.2KΩ	†29KΩ	1.4Meg
V 3	6BA6	15.2Ω	0Ω	.4Ω	0Ω	†2.2KΩ	†29KΩ	470Ω
V 4	6AV6	15Meg	0Ω	.4Ω	0Ω	370KΩ	370KΩ	†220KΩ
V 5	6AQ5	490KΩ	220Ω	0Ω	.4Ω	†230Ω	†2.2KΩ	490KΩ
V 6	6X4	390Ω	INF	.4Ω	0Ω	INF	400Ω	15KΩ

† MEASURED FROM PIN 7 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1 - DC Voltage measurements are at 20,000 ohms per volts, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from sqcket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

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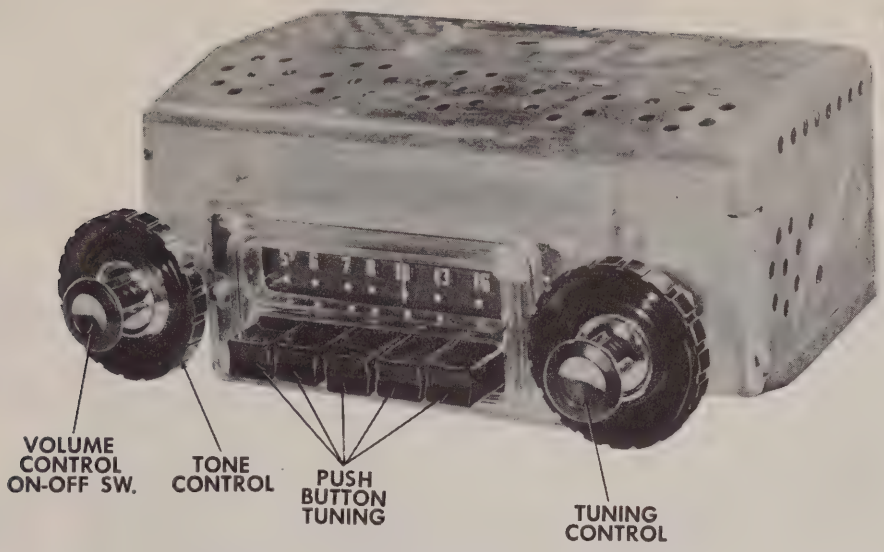

WILLYS
MODEL 679517

WILLYS
MODEL 679517

TRADE NAME	Willys Model 679517 (Factory Model WS2C) (1952 Willys Automobile)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago 51, Ill.
TYPE SET	Battery Operated Custom Built Superheterodyne Automobile Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp. 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 7.5 Amp. @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540-1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2). Low side to chassis.	455 KC (400∿ Mod.)	Extreme high frequency end.	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.	Fig. 1	Thru dummy to antenna receptacle	1605KC	"	"	A5	"
3.	"	"	1300 KC	Tune manually to maximum signal	"	A6, A7	"
	Adjustment of A8, A9 and A10 will not be required unless tuner does not track properly or does not cover the required range. In that event, proceed with step. 4.						
4.	Fig. 1	Thru dummy to antenna receptacle	1605 KC (400∿ Mod.)	Extreme high frequency end.	Across voice coil	A5, A6 A7	Remove dial scale bracket and dial background. Adjust for max. output.
5.	"	"	1300 KC	With tuning knob move carriage in 5/16" from position in step 4.	"	A8, A9 A10	Adjust in order given, for max. output.
6.	"	"	1605 KC	Tune to maximum signal at 1605 KC	"	A5, A6, A7	Adjust for maximum output.
7.	"	"	1300 KC	Tune to maximum signal at 1300 KC	"	A8, A9 A10	Adjust for maximum output. Repeat step 6.
	Tune to 1300 KC signal and adjust the pointer adjust cam to set the pointer on the 1300 KC mark on the dial scale.						
	With set installed in car and antenna fully extended, tune in a weak signal around 1400 KC and adjust A7 for maximum volume						

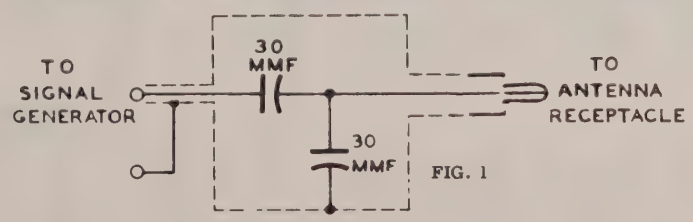

FIG. 1

HOWARD W. SAMS & CO., INC. • Indianapolis 5, Indiana

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. -ACV-AF Amp.	6AT6	6AT6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	15	350	23A485677	AFH3-104		UP15S135C		TVL-3630	■ Filter
B	10	350							▲ Filter
C	20	25							Audio Output Cathode
C2	90		21A591682						Fixed Trimmer
C3	.006	100	8A4529	P488-006		PTE6D6	GP2-333-602	6TM-D6	RF Coupling
C4	.05	100	8R13514	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C5	.1	400	8R13166	P488-1	DF-104	PTE4P1		4TM-P1	Screen Bypass
C6	330	500	21R2744	1468-00035	D6-331		GP2K-331	1FM-335	RF Amp. Cathode
C7	5		21K70720	SI15	TCZ-4.7	5W5V5	GP1K-050	MS-55	RF Coupling
C8	47	500	21R6513	1469-00005		5R5Q5		MS-45	Osc. Grid Cap.
C9	220								Fixed Trimmer
C10	5		21K70720	SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	IF Coupling
C11	.01	100	8R472754	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C12	.02	100	8R51209	P488-02	DF-203	PJ2S2		2TM-S2	Tone Comp.
C13	.006	400	8K71910	P488-006		PTE6D4	GP2-333-602	6TM-D6	Tone Comp.
C14	.01	400	8R23690	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Coupling
C15	470		21R6590	SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Audio Output Grid
C16	.004	400	8K71909	P688-004	D6-402	PTE6D4	GP2-333-402	6TM-D4	Audio Output Plate
C17	.02	1000	8K114137	P1088-02		PTE16S2		MB-D2	Buffer Cap.
C18	.5	100	8K17028	P185-5		MP2P5		68P20	Hash Filter
C19	.5	100	8K17028	P185-5		MP2P5		68P20	Hash Filter

CONTROLS

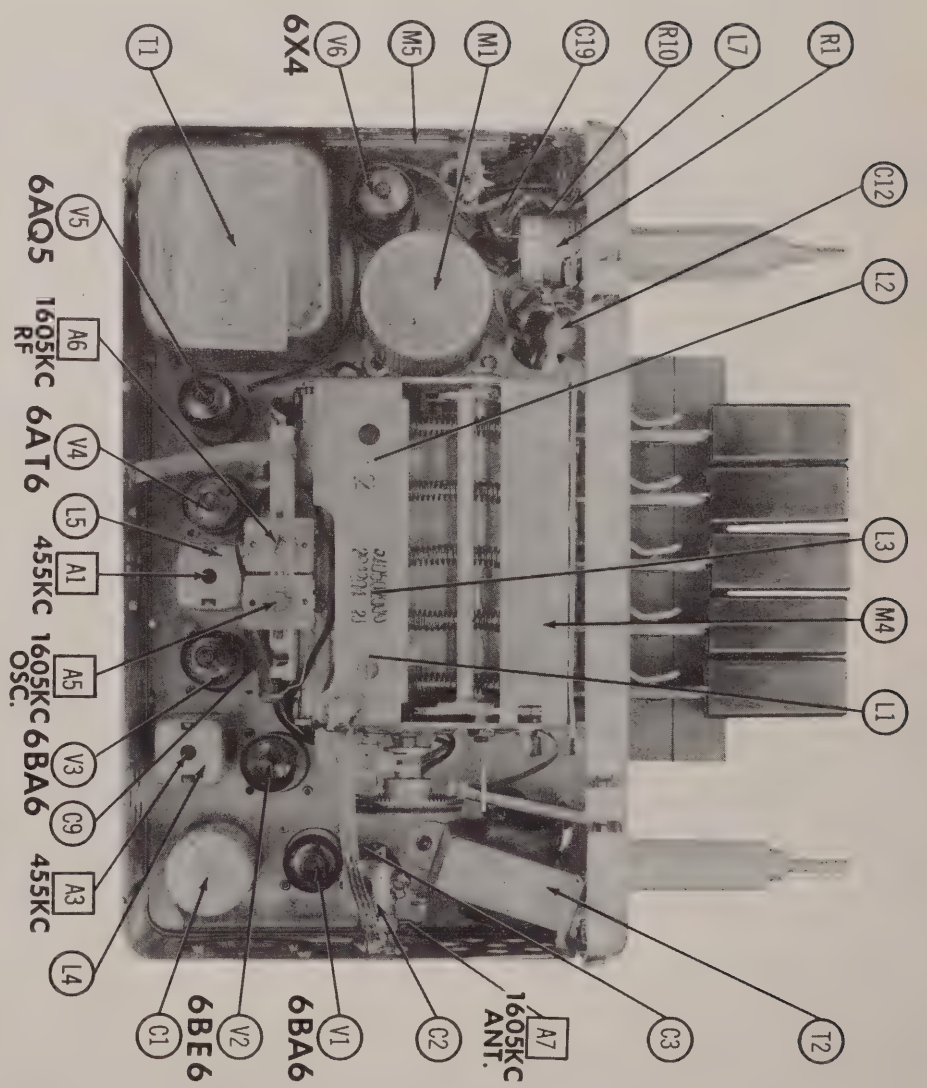
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	1/2	18K511814	QJ-319A*			Tone Control-Panel
B	250KΩ	1/2					Volume Control &SW-Tapped@ 150KΩ-Rear

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENT & SHAFTS B13-137 & P1-210 (Panel), B18-130X & R1-223 (Rear) & SWITCH 76-1

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	470KΩ	1/2	6R6032	BTS-470K	AVC Network
R3	330Ω	1/2	6R6010	BTS-330	RF Amp. Cathode
R4	15KΩ	1/2	6R6477		RF Amp. Plate
R5	33KΩ	1/2	6R6012		Osc. Grid
R6	6800Ω	2	6R5690	BTB-6800	Screen Dropping
R7	150Ω	1/2	6R3992	BTS-150	IF Amp. Cathode
R8	1Meg	1/2	6R6004	BTS-1Meg	AVC Network
R9	47KΩ	1/2	6R6056	BTS-47K	Diode Filter
R10	12KΩ	1/2	6R6394	BTS-12K	Tone Compensation
R11	1Meg	1/2	6R6004	BTS-1Meg	Diode Load
R12	4.7Meg	1/2	6R2122	BTS-4.7Meg	AF Amp. Grid
R13	2700Ω	1/2	6R5577	BTS-2700	AF Amp. Grid
R14	470KΩ	1/2	6R6032	BTS-470K	AF Amp. Plate
R15	220KΩ	1/2	6R6015	BTS-220K	Output Grid
R16	270Ω	1	6R6336	BTA-270	Output Cathode
R17	2200Ω	2	6R476130	BTB-2200	Filter
R18	56Ω	1/2	6R5614		Hash Suppression
R19	56Ω	1/2	6R5614		Hash Suppression

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VDC @ 5.8A	520 VCT @ .055A			24B472533		P-4071	VT-3

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	6.2K	3.9Ω	500Ω	.7Ω	25B500727	A-3877	A-2930	RO-8	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	4.3Ω	3.9Ω	50C511815 50K511815 ①	Mod. F69-U ST-813	69E10	
	CONE DIA.	V. C. DIA.				
SP1B	6"X9"	3/4"				

① Alternate Speaker

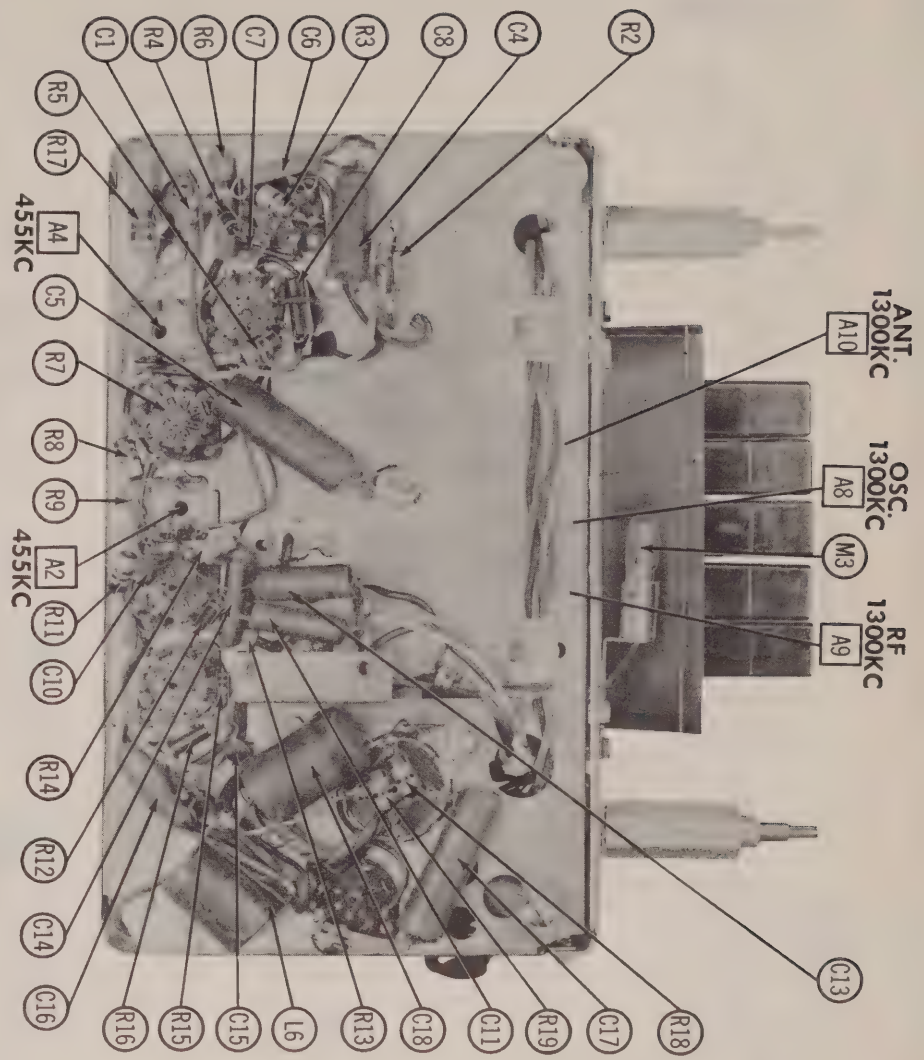
COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	
L1	Ant. Coil	12Ω		24B511655		
L2	RF Coil	11.5Ω		24K511656		
L3	Osc. Coil	.4Ω	4.4Ω	24K511657		
L4	Input IF	18Ω	18Ω	24C485553	BC-352	
L5	Output IF	17.2Ω	17.2Ω	24K485555		
L6	Fil. Choke	.1Ω		24A472535		
L7	Hash Choke	0Ω		24K592269		

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Int.	6.3 VDC	115CPS	48B3333	5342	5342	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14 A. 32 V.	65K12894	9K512054	307014	155014	SFE14	HRI

DIAL LIGHTS

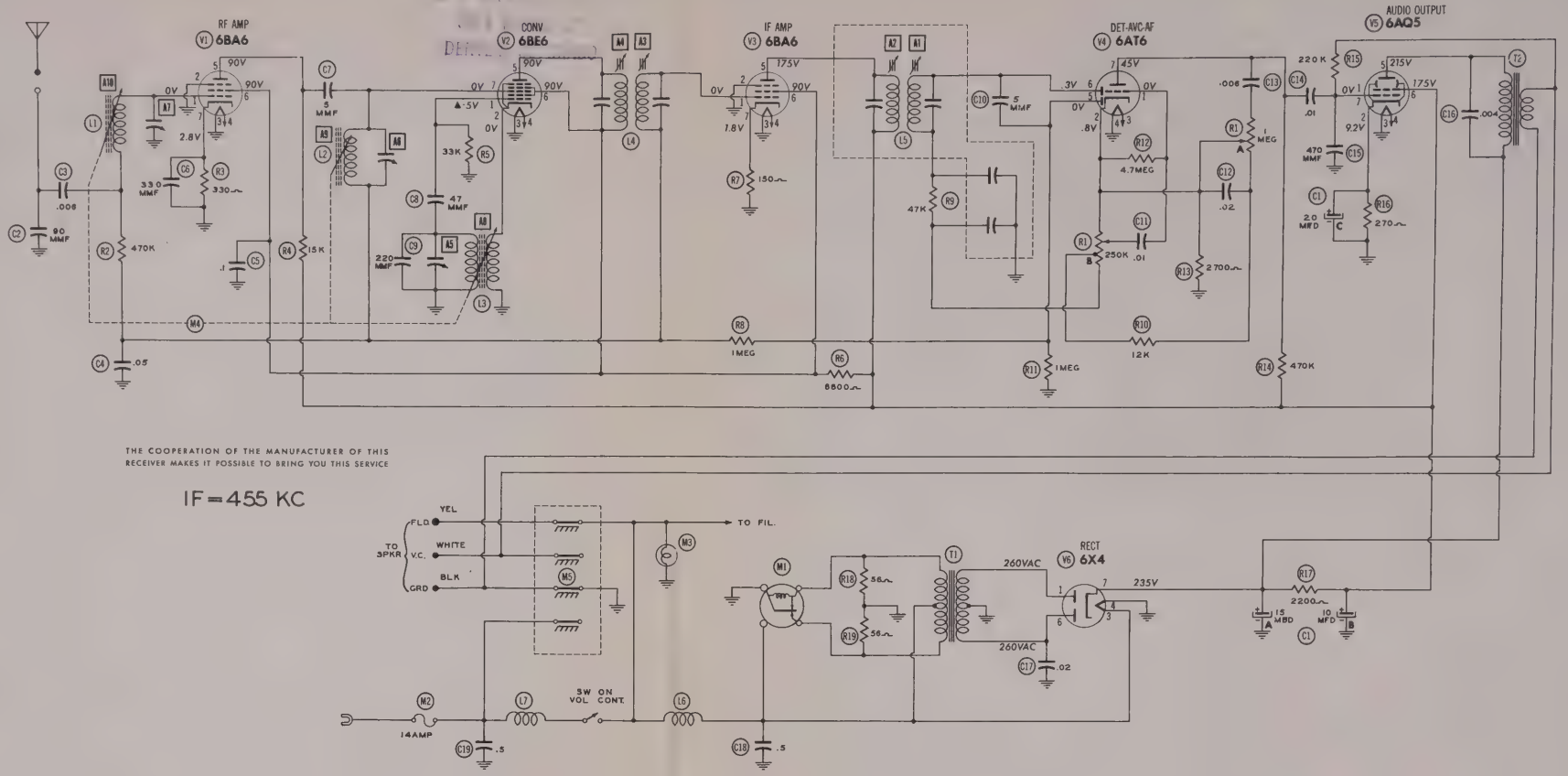
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M3	Bayonet	6.3	.25	Blue	65X10867		Type #44

PUSH BUTTON ADJUSTMENT

1. Pull out push button and using the tuning knob, tune carefully to the desired station signal.
2. Push the button all the way in to lock tuner on the station.
3. Follow same procedure for the remaining four push buttons.

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M4	Tuning Unit	51D502000	Complete
M5	Spark Plate	1A510791	
A7	Trimmer	20A501419	Ant. 50-280MMF (Includes Bracket)
A6	Trimmer	38-8765-7	RF Adj.
A5	Trimmer	38-8763-8	Osc.Adj.
	Pointer	1X512039	
	Dial Scale	34B511790	
	Knob	1X512041	Dummy (Behind Tuning Knob)
	Knob	1X512040	Tone
	Knob	1X512042	Tuning & Volume



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.5Meg	0Ω	0Ω	.4Ω	†17KΩ	†9KΩ	330Ω
V 2	6BE6	33KΩ	.4Ω	0Ω	.4Ω	†9KΩ	†9KΩ	2Meg
V 3	6BA6	2Meg	0Ω	0Ω	.4Ω	†2.2KΩ	†9KΩ	150Ω
V 4	6AT6	4.7Meg	2.7KΩ	.4Ω	0Ω	1Meg	200KΩ	†470KΩ
V 5	6AQ5	220KΩ	270Ω	0Ω	.4Ω	†500Ω	†2.2KΩ	220KΩ
V 6	6X4	360Ω	INF	.4Ω	0Ω	INF	340Ω	90 KΩ

† MEASURED FROM PIN 7 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

1 - DC Voltage measurements are at 20,000 ohms per volt , AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3. - Measured values are from socket pin to common negative.
4 - Battery voltage maintained 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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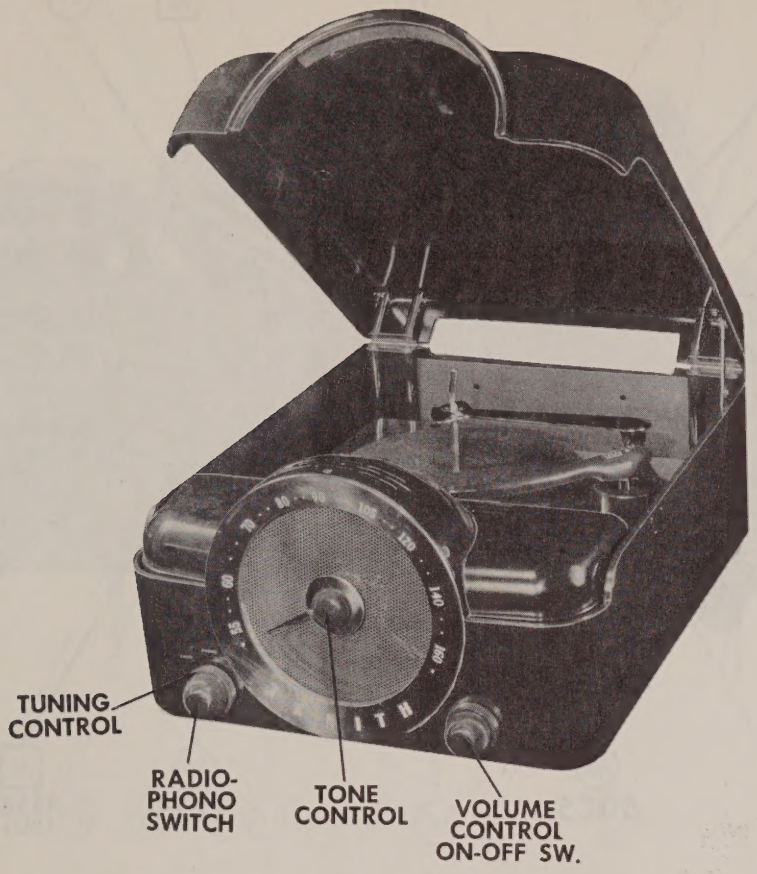
ZENITH
MODELS J644, J665E, R (Ch. 6J02)



ZENITH
MODELS J644, J665E, R (Ch. 6J02)

TRADE NAME	Zenith Models J664, J665E, R (Ch. 6J02)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago, Ill.
TYPE SET	AC Operated Radio - Phono Combination Superheterodyne Receiver
TUBES (SIX)	Types 12BE6 Conv., 6BJ6 IF Amp. - Phono Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 12J5 Phono Osc., 35W4 or 35Z5GT Rectifier
POWER SUPPLY	110-120 Volts AC- 60 Cycle — RATING .250 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 - 1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial. Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B -. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.5MFD	High side thru .5 MFD to stator lug on rear section of tuning gang. Low side to B - .	455KC (400∿Mod.)	600KC	Across voice coil	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		Loop	1400KC	1400KC	"	A6	Adjust for maximum output.

In the event that the receiver oscillates during phono operation adjust B1 to the point where oscillation ceases.

FOR SERVICE INFORMATION ON ZENITH RECORD CHANGER UNIT S-14031 - SEE PHOTOFACT SET #145 - FOLDER #13.

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PARTS LIST AND DESCRIPTIONS

ZENITH
MODEL J664

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amp-Phono Amp.	6BJ6	6BJ6	7CM	
V3	Det.-AVC AF Amp.	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Phono Oscillator	12J5	12J5	6Q	
V6A	Rectifier	35W4	35S4	5BQ	
B	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	80	150	22-2272	AFH3-13		UP84215		R1040	■ Filter
B	40	150							▲ Filter
C	20	150							Decoupling
C2	.05	200	22-829	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C3	100		22-5	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Osc. Grid Cap.
C4	.0005	600	22-854	1468-0005	D6-501	PTE6T5	GP2K-501	6TM-T5	AVC Filter
C5	10000		22-3	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Phono Audio Coupling
C6	100	500	22-2361	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Phono Osc. Feedback
C7	.05	200	22-829	P288-05	DF-503	PJ2S5		2TM-S5	Phono Osc. Grid Cap.
C8	4000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	1FM-24	Phono Audio Coupling
C9	10000		22-3	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling
C10A			♦105-27						Audio Coupling
B									AF Amp. Plate Bypass
C									Audio Output Grid
C11	4000		22-4	BPD-004	D6-402	TM5D4	GP2-333-402	1FM-24	Tone Comp.
C12	.05	200	22-178	P288-05	DF-503	PJ2S5		2TM-S5	Tone Comp.
C13	.01	400	22-1182	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C14	10000		22-3	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Line Filter
C15	.05	200	22-829	P288-05	DF-503	PJ2S5		2TM-S5	Line Isolation

♦ Items C10A, C10B, C10C, R10A, R10B are combined in one unit

CONTROLS

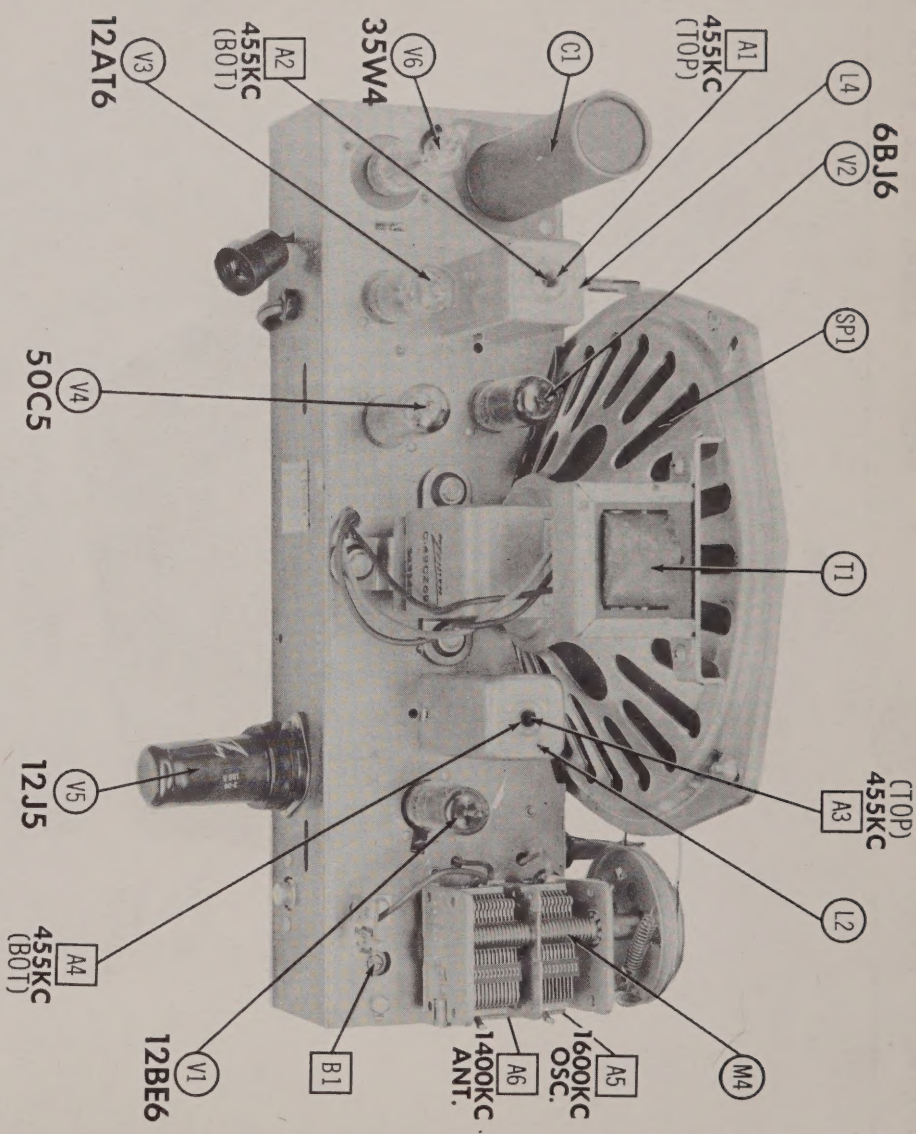
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	63-2270	Q11-133	AG-58-S	AN-59	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	K-155	Attach to R1A per instructions
R2A	500KΩ	½	63-2269	Q11-133	AG-58-S	AN-59	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
R3	10KΩ	½	63-1828	BTS-10K	Osc. Grid
R4	15Meg	½	63-1961	BTS-15Meg	AVC Network
R5	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R6	47KΩ	½	63-1856	BTS-47K	Phono Det. Plate
R7	2.2Meg	½	63-1926	BTS-2.2Meg	AVC Network
R8	4.7Meg	½	63-1940	BTS-4.7Meg	AF Amp. Grid
R9	820Ω	½	63-1782	BTS-820	Tone Compensation
R10A		½	♦105-27		AF Amp. Plate
B		½			Output Grid
R11	150Ω	1	63-1977	BTA-150	Output Cathode
R12	2200Ω	½	63-1800	BTS-2200	Feedback Network
R13	1000Ω	1	63-1786	BTA-1000	Filter
R14	22Ω	½	63-1219		Surge Limiter - Wire Wound
R15	2.2Meg	½	63-1926	BTS-2.2Meg	Phono Osc. Grid
R16	22KΩ	½	63-1842	BTS-22K	Phono Osc. Plate
R17	10KΩ	½	63-1828	BTS-10K	Phono Osc. Decoupling
R18	47KΩ	½	63-1856		Parasitic Suppressor

♦ Items R10A, R10B, C10A, C10B, C10C are combined in one unit

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	2.3KΩ	3.2Ω	220Ω Tap ② 6Ω	.6Ω	Part of 49CZ697	A-3330 ①	A-3031 ①	RO-3 ①	① Drill one new Mtg. hole

SPEAKER

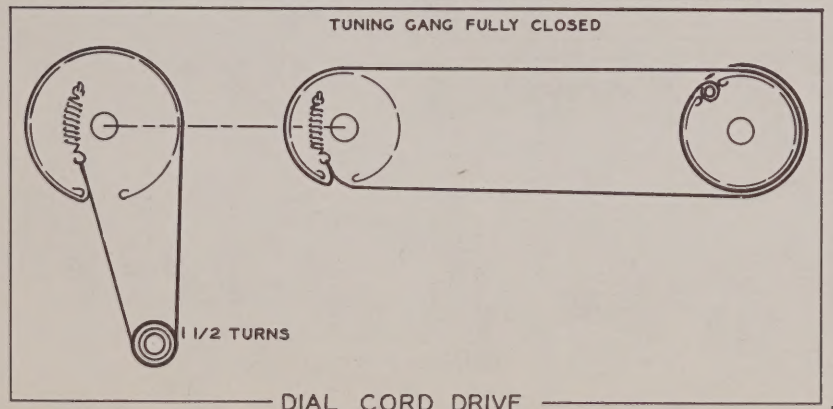
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	ZENITH PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.2Ω	49CZ697	Mod. P8-V ST-115	8A21	
	CONE DIA.	V. C. DIA.				
SP1B	8"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	ZENITH PART No.	MERIT PART No.	
L1	Loop Ant.	3Ω		S-17651		
L2	Osc. Coil	.7Ω	6Ω	S-13799		
L3	Input IF	15.2Ω	15.2Ω	95-1101		
L4	Output IF	20Ω	20Ω	95-1102		
L5	Phono Osc.	2.1Ω		S-12603		

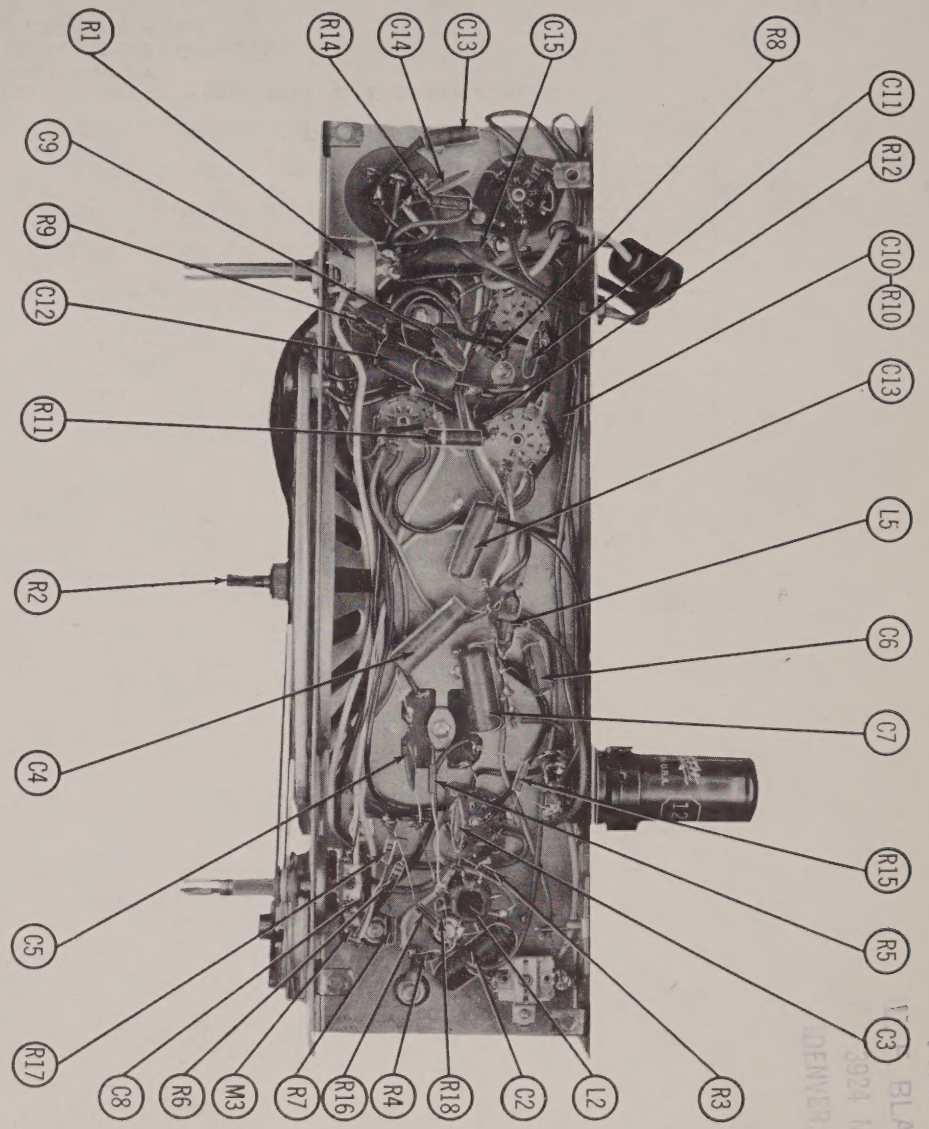
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
M1	Phono Cartridge	S-15780	
M2	Phono Needle		
M3	Switch	85-512	Radio - Phono
M4	2 Gang Tuning cap.	22-2273	(18-447MMF, 31-197MMF)
B1	Trimmer	22-2242	Phono Osc. Adj.
	Dial Pointer	59-255	
	Dial Scale	26-456	
	Knob	46-718	Radio - Phono (Models J664 & J665R)
	Knob	46-855	Tone - Models J664 & J665R)
	Knob	46-946	Tuning (Models J664, J665R)
	Knob	S-18665	Volume (Assembly) J665, J665R
	Knob	46-979	Radio - Phono (Model J665E)
	Knob	46-980	Tone - (Model J665E)
	Knob	46-538	Tuning - (Model J665E)
	Knob	S-18927	Volume (Assembly) (Model J665E)



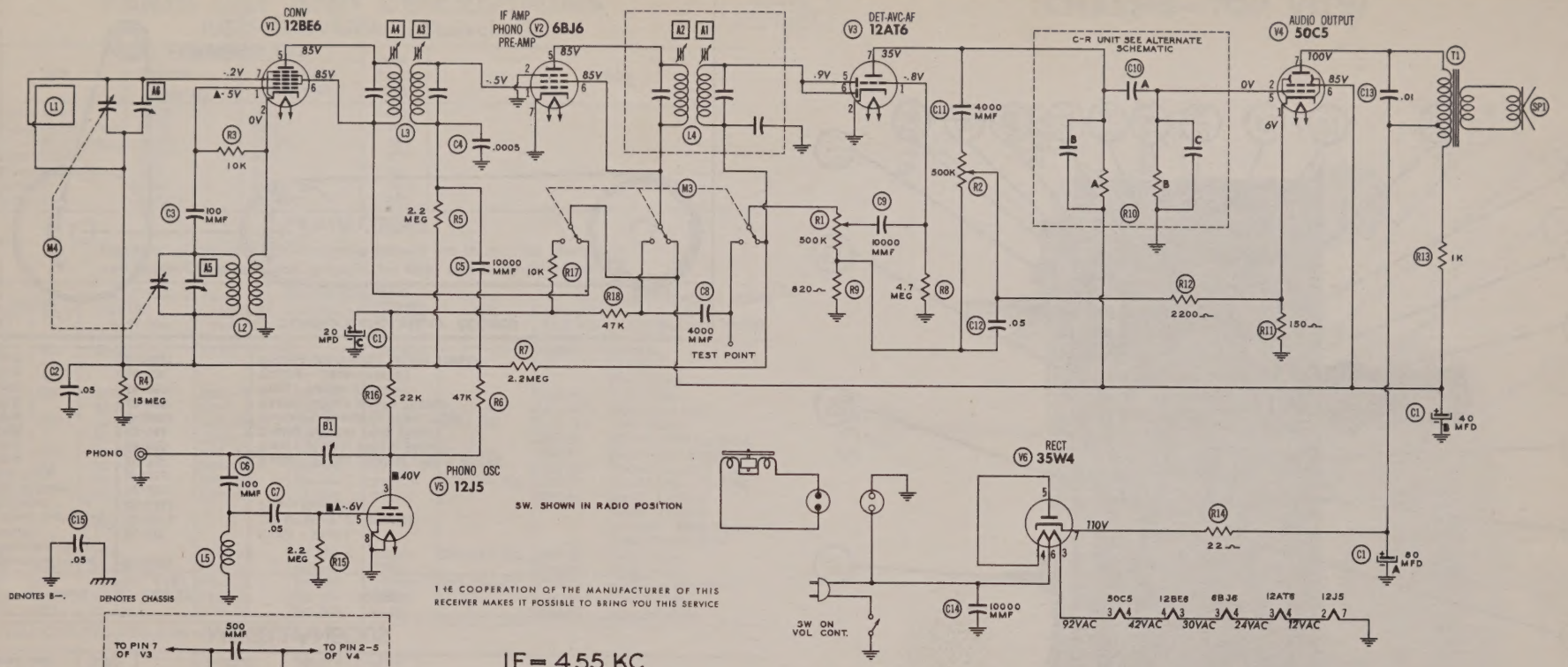
DIAL CORD DRIVE

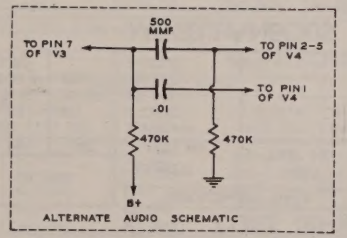
CHASSIS—BOTTOM VIEW



PROPERTY OF BLANKENSHIP
3824 MEADE ST.
DENVER, COLORADO

ZENITH MODEL J664





† †E COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12BE6	10KΩ	.7Ω	30Ω	42Ω	†1KΩ	†1KΩ	2Meg	
V 2	6BJ6	4Meg	0Ω	30Ω	24Ω	†1KΩ	†1KΩ	0Ω	
V 3	12AT6	4.7Meg	0Ω	24Ω	12Ω	410KΩ	410KΩ	†470KΩ	
V 4	50C5	150Ω	470KΩ	92Ω	42Ω	470KΩ	†1KΩ	†242Ω	
V 5	12J5	INF	12Ω	■†33KΩ	INF	2.2Meg	INF	0Ω	0Ω
V 6	35W4	109Ω	†22Ω	92Ω	127Ω	127Ω	109Ω	60KΩ	

ALL MEASUREMENTS TAKEN IN "RADIO" POSITION UNLESS NOTED
† MEASURED FROM PIN 7 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER
■ MEASURED IN "PHONO" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.